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| **Course**  | **:**  | **ESM - 1 Electronic Production Technician** |
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| **Course Details** |  |  |
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| Course ID | :  | NL/M/L4/C076 |
| Candidate Eligibility | :  | ITI/12th year of Schooling |
| No. of NOS (if QP) | :  | NA |
| NSQF Level | :  | 4 |
| Cost Category | :  | 1 |
| Course Duration | :  | 360 |
| a) Theory Duration | :  | 200 |
| b) Practical Duration | :  | 160 |
| a) OJT Duration | :  | 0 |

**Trainer Qualification Work Experience**

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| **Trainer Qualification** | **Work Experience** |
| **Essential Qualification:**  | Minimum 1 year of teaching experience in relevant field. |
| B.Tech/ B.E. in Electronics/ Electrical Engineering |
| **Desirable Qualification:** |
| M.Tech./M.E. in Electronics/Electrical Engineering |

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

**Name and address of submitting body:**

National Institute of Electronics & Information Technology, Patna

**Name and contact details of individual dealing with the submission**

|  |  |  |
| --- | --- | --- |
| **Name** | : | Satya Prakash Tiwari |
| **Position in the organization** | : | Joint Director |
| **Tel number(s)** | : | 0612-2219134 |
| **Mobile** | : | 9431021577 |
| **E-mail address**  | : | sptiwari@nielit.gov.in |

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| **Qualification Title**  | ESM-1 Electronic Production Technician  |
| **Qualification Code**  | **NL/M/L4/C076**  |
| **Nature and purpose of the qualification**  | **Nature: Certificate Course** **Purpose:** To become Assembly Line Supervisor, Mechanic Auto Electrical & Electronics, ESM2 |
| **Body/bodies which will award the qualification** | National Institute of Electronics & Information Technology (NIELIT)Near IIT Patna, Amhara, Bihta, Patna (Bihar)-801106 |
| **Body which will accredit providers to offer courses leading to the qualification** | National Institute of Electronics & Information Technology (NIELIT)Near IIT Patna, Amhara, Bihta, Patna (Bihar)-801106 |
| **Body/bodies which will carry out assessment of learners** | Examination Cell,National Institute of Electronics & Information Technology (NIELIT), Near IIT Patna, Amhara, Bihta, Patna (Bihar)-801106 |
| **Occupation(s) to which the qualification gives access** | ESM-1 Electronic Production Technician  |
| **Licensing requirements** | **Not Applicable** |
| **Level of the qualification in the NSQF** | **4** |
| **Anticipated volume of training/learning required to complete the qualification** | **280** |
| **Entry requirements and / or recommendations** | ITI/12th **.****Age 18 years to 35 years** |
| **Progression from the qualification** | **Professional:** Operator/ Technician, Senior Service Technician, Line Supervisor |
| **Planned arrangements for the Recognition of Prior learning (RPL)** | **Yes** |
| **International comparability where known** | **N/A****CNC** |
| **Date of planned review of the qualification.** | **N/A** |

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| **Formal structure of the qualification**  |
| **Title of component and identification code** | **Mandatory/ Optional** | **Estimated size (learning hours)** | **Level** |
| **ESMT01** Basic Concept of Electronics and Electronic Components  | M | 60 | **4** |
| **ESMT02** PCB Design and Soldering Techniques  | M | 30 |
| **ESMT03** Electronics Sub Assembly | M | 30 |
| **ESMT04** Integrated Testing | M | 20 |
| **ESMT05** Manufacturing Techniques  | M | 20 |
| **ESMT06** Quality Management System | M | 10 |
| **ESMT07** Safety Health and Environment Standards | M | 5 |
| **ESMT08** Interpersonal and Communication Skills/ Reporting | M | 5 |
| **ESMT09** Project with Instructor Assistance/ On Job Training | M | 180 |
|  | **TOTAL-** | **360** |  |

**ASSESSMENT**

**Body/Bodies which will carry out assessment:**

Examination cell - National Institute of Electronics & Information Technology, Patna

**How will RPL assessment be managed and who will carry it out?**

*YES. Learners who have met the requirements of any Unit Standard that forms part of this qualification may apply for recognition of prior learning to the relevant Education body. The applicant must be assessed against the specific outcomes and with the assessment criteria for the relevant Unit Standards.*

**Describe the overall assessment strategy and specific arrangements, which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.**

**1. ASSESSMENT GUIDELINE:**

 The emphasis is on practical demonstration of skills & knowledge based on the performance criteria. Each OUTCOME is assessed and marked separately. Student is required to pass in all OUTCOMEs individually and marks are allotted. Following assessment methodologies are used.

Written Assessment (Multiple Choice Questions)

A. Practical Assessment

B. Viva Voce Assessment

The assessment results are backed by following evidences.

1. The assessor collects a copy of the attendance for the training done under the scheme. The attendance sheets are signed and stamped by the in charge / Head of the Training Centre.
2. The assessor verifies the authenticity of the candidate by checking the photo ID card issued by the institute as well as any one Photo ID card issued by the Central Government. The same is mentioned in the attendance sheet.
3. The assessor assigns roll number.
4. The assessor takes photograph of all the students along with the assessor standing in the middle and with the centre name/banner at the back as evidence.

**2. ASSESSORS:**

NIELIT Patna faculty teaching the course, also assesses the students as per guidelines set by Examination cell of NIELIT Patna.

**3. ELIGIBILITY TO APPEAR IN THE EXAM:**

Minimum 75% attendance is compulsory for the students to appear for the assessments.

**4. MARKING SCHEME:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Outcome to be assessed**  | **Assessment Criteria for the outcome**  | **Total Mark**  | **Written**  | **Practical**  | **Internal/ Vivavoce**  |
| 1. Use & Testing of Electrical & Electronic Components.  | * Testing the basics of Magnetism, Inductor

Circuits, Building Electronic Circuits * Recognition and Handling of various Electronic /Electromechanical components.
* Handling, testing and installation, of ICs and Electrostatic Discharge (ESD) Protection.
 | 120 | 48 | 60 | 12 |
| 2.PCB Designing and component Soldering..  | * Testing the basics of different types of PCBs like Single Sided, Double-Sided, Multi Layered
* Designing of PCB.
 | 60 | 24 | 30 | 6 |
| 3. Connections of Battery & placing components on PCB using soldering.  | * Practical test for Crimp, Bunch & Harness wires.
* Practical test on how to make the battery connections.
* Use Soldering & De-soldering methods by placing components onto the PCB
 | 60 | 24 | 30 | 6 |
| 4.Integrated testing  | * Use of Test and Measurement Instruments
* Working with Automated Testing Technologies.
 | 50 | 20 | 25 | 5 |
|  Practical test on PCB Manufacturing Process, PCB inspection  | 50 | 20 | 25 | 5 |
| 1. Materials, Inventory management & Quality control of the product by doing certain checks.
 |  Check for quality control by following the elements of ISO 9001.  | 20 | 8 | 10 | 2 |
| 6. Will be able to maintain safe working Environment according to ISO standards.  | * Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements and according to ISO 14001 & OHSAS

18001 * Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures

  | 20 | 8 | 10 | 2 |
| 7. Will be able to prepare Technical report & can communicate clearly.   | * Testing the knowledge of communication skills
* Ability of writing technical reports
* Interaction with colleagues.
 | 20 | 18 | NA | 2 |
|   | Total  | 400 | 170 | 190 | 40 |

**5. PASSING MARKS:**

Passing criteria is based on marks obtain in attendance record, term works , assignments, practical’s performance, viva or oral exam, module test, class test, practical exam and final exam

Minimum Marks to pass practical exam – 70%

Minimum Marks to pass theory exam – 30%

Grade Equivalents:-

>85% Ex

>65% & <85% A

>50% & <65% B

>35% & <50% C

<35% D

**6. RESULTS AND CERTIFICATION:**

The assessment results are backed by evidences collected by assessors. Successful trainees are awarded the certificates by NIELIT, Patna.