Competency Based Curriculum (CBC)

Plastic Injection Moulding Machine Operation

Level-3

Plastic Sector

Curriculum Code:CBC-PS-PIMMO-L3-EN-V1

National Skills Development Authority
Prime Minister's Office
Government of the People's Republic of Bangladesh

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The curriculum is designed based on NSDA approved **Plastic Injection Moulding Machine Operation, Level – 3,** Occupation Competency Standards. It covers the information required to implement the **Plastic Injection Moulding Machine Operation, Level - 3** standard. It is an important supporting document for trainers, assessors and curriculum developers.

This document has been developed by NSDA with the support of ISC representatives'/industry representatives from relevant sectors, academia, curriculum specialists, expert trainers and professionals.

All Government-Private-NGO training institutes of the country recognized by NSDA can use this curriculum to implement skill-based training of **Plastic Injection Moulding Machine Operation, Level –3** course.

Introduction

The importance of skill-based training in socio-economic development of the country is immense. Demand oriented training is an important area for increasing productivity, creating employment and alleviating poverty. Skill development training institutes established at public and private level in Bangladesh are providing skill development training commercially. It is important to have uniform training curriculum based on occupation to improve and harmonize the overall quality of training conducted in all these training institutions. NSDA as provided in the National Skill Development Authority Act, 2018 is formulating uniform curriculum for training programs conducted across the country in various occupations/trades.

Competency standards for various occupations (level based) are being formulated by NSDA with the aim of creating skilled manpower as per the demand of domestic and international labor market.

Skilled and trained trainers are essential for providing training and assessment according to competency standards. For this purpose, the curriculum of **Plastic Injection Moulding Machine Operation, Level -3** has been formulated through an expert committee consisting of ISC/Industry representatives from respective sectors, academia, curriculum specialists, expert trainers and professionals. This curriculum includes essential course design, course structure, course delivery methods, equipment and facilities inventory, and physical facilities. Apart from this, the assessment criteria of trainees, assessment procedure, qualification level and certification process have been inserted.

This curriculum is an NSDA-approved document that describes the overall contents of the training implementation of **Plastic Injection Moulding Machine Operation, Level –3** as per industry demand-based competency standards. The trainees of **Plastic Injection Moulding Machine Operation, Level –3** course can develop themselves as skilled and qualified **Moulding Machine Opertator** by following properly.

Competency Based Learning Materials (CBLM) and Assessment tools are developed following this document. Assessment and certification of trainees will also follow this curriculum.

List of Abbreviations

General	
NSDA	National Skills Development Authority
ISC	Industry Skills Council
BPGMEA	Bangladesh Plastic Goods Manufacturers and Exporters Association
NPVC	National Pre-Vocation Certificate
NSQF	National Skills Qualifications Framework
PPP	Public Private Partnership
SCVC	Standards and Curriculum Validation Committee
STP	Skills Training Provider
UoC	Unit of Competency
PIMMO	Plastic Extrusion and Blow Molding Machine Operation
Occupation Specific	
PPE	Personal protective equipment
OSH	Occupational Safety and Health
PE	Polyethylene
PP	Polypropylene
PS	Polystyrene
ABS	Acrylonitrile Butadiene Styrene
PVC	Polyvinyl chloride
PMMA	Polymethyl Methacrylate
PET	Polyethylene Terephthalate
CA	Cellulose Acetate
PTFE	Polytetrafluoroethylene
PA	Poly Amide
PC	Poly carbonate
POM	Poly Oxy Methylene
PBT	Poly Butylene Terephthalate
PEEK	Poly ether ether ketone
PAI	Polyamide Imide
MF	Melamine formaldehyde
UF	Urea Formaldehyde
PF	Phenol Formaldehyde
EP	Epoxy
UP	Unsaturated Polyester
IMM	Injection moulding machine
SOP	Standard Operating Process
QC	Quality Control

Table of Content

Course Design

Name of Course: Plastic Injection Molding Machine Operation

Skill Level : National Skills Certificate(NSC)-3

Nominal Hours : 360Hours

List of Unit of Competency

Generic Unit of Competency

1. Carryout Workplace Interaction
2. Lead Small Team

Sector Specific Unit of Competency

1. Interpret the Scenario and Environmental Issues of Plastic Sector

Occupation Specific Unit of Competency

1. Interpret the Application Process of Machine, Tools, Equipment and Plastic Raw Material
2. Perform Mold Settings
3. Operate Machine
4. Perform Visual Identification of Product Defects
5. Perform Minor Machine Servicing and Maintenance

Description of Course

It is a skill-based training course designed to develop the knowledge, skills and workplace attitude required for the plastic injection molding machine operation in Plastics Sector. The curriculum covers various skills such as, carryout workplace interaction, lead small team, interpret the scenario and environmental issues of plastic sector, interpret the application process of machine, tools, equipment and plastic raw material, perform mold settings, operate machine, perform visual identification of product defects and perform minor machine servicing and maintenance

Learning Outcome of the Course

Successful completion of this course will lead to certification in **Plastic Injection Molding Machine Operation**, Level-3 under the Bangladesh National Qualification Framework (BNQF). Also, the course has the following functional, economic, and social learning outcomes.

Work Oriented Learning Outcome

1. Can work effectively as a Plastic Injection Molding Machine Operator
2. Occupational Safety and Health Regulations (OSH) may apply

Financial Learning Outcome

1. Job opportunities will be created as **Plastic Injection Molding Machine Operation** in country and abroad.
2. Can contribute to socio-economic development by participating in skill development activities

Social Learning Outcome

1. Social status will increase by achieving personal development
2. The share of skilled human resources will increase in line with changing technology
3. The number of skilled and trained **Plastic Injection Molding Machine Operator** will increase in the society

Course Structure

Generic Unit of Competency - 35Hrs.

Sl. No.	Unit of Competency	Module Title	Learning Outcome	Nominal Hours
1	Carryout Workplace Interaction	Carrying out Workplace Interaction	1. Interpret workplace communication and etiquette 2. Read and understand workplace documents 3. Participate in workplace meetings and discussions 4. Practice professional ethics at workplace	15
2	Lead Small Team	Leading Small Team	1. Provide team leadership 2. Assign responsibilities 3. Set performance expectations for team members 4. Supervise team performance	20

Sector Specific Unit of Competency – 30 Hrs.

Sl. No.	Unit of Competency	Module Title	Learning Outcome	Nominal Hours
1	Interpret the Scenario and Environmental Issues of Plastic Sector	Interpreting the Scenario and Environmental Issues of Plastic Sector	1. Identify organizational structure within the sector 2. Recognize history of plastic Industries in Bangladesh 3. Identify scenario of Plastic Industries 4. List prime export markets 5. Interpret & mitigate environmental issues 6. Follow green practices	30

Occupation Specific Unit of Competency–275 Hours

Sl. No.	Unit of Competency	Module Title	Learning Outcome	Nominal Hours
1.	Interpret the application process of machine, tools, equipment and plastic raw material.	Interpreting the application process of machine, tools, equipment and plastic raw material.	1. Prepare for work 2. Interpret the functionality of machine, tools and equipment 3. Interpret the application process of raw material	30
2.	Perform mold settings	Performing mold settings	1. Prepare for mold setting 2. Load mold 3. Unload mold from machine 4. Maintain workplace, tools, equipment and materials	55
3.	Operate Machine	Operating Machine	1. Prepare for machine operation 2. Set machine 3. Perform machine operation 4. Check product 5. Maintain workplace, tools, equipment and materials	140
4.	Perform visual identification of product defect	Performing visual identification of product defect	1. Prepare for work 2. Identify and rectify defect 3. Maintain workplace, tools, equipment and materials	20
5	Perform minor machine servicing and maintenance	Performing minor machine servicing and maintenance	1. Perform routine maintenance 2. Identify and rectify minor machine problem 3. Maintain workplace, tools, equipment and materials	

Analysis of Competency

Generic Unit of Competency	Number of Module
1. Carryout workplace interaction	01
2. Lead small team	01
Sector SpecificUnit of Competency	
3. Interpret the scenario and environmental issues of plastic sector	01
Occupation SpecificUnit of Competency	
4. Interpret the application process of machine, tools, equipment and plastic raw material	01
5. Perform mold settings	01
6. Operate machine	01
7. Perform visual identification of product defects	01
8. Perform minor machine servicing and maintenance	
Total	**08**

Course Delivery

1. Face to Face
2. Self Paced Learning
3. On the job
4. Off the job

Course Training Method

A variety of methods can be applied to course training depending on the students' learning interests and abilities. Instructors should select appropriate methods to train students. Some of the common methods used during skills training are:

1. Lecture
2. Presentation
3. Discussion
4. Demonstration
5. Guided Practice
6. Individual Pactice
7. Project Work
8. Problem Solving
9. Brainstorming

Module of Instruction

- ✓ Generic
- ✓ Sector Specific and
- ✓ Occupation Specific

Generic Module

Unit of Competency	**Carryout Workplace Interaction**
Unit Code	**GU-02-L2-V1**
Module Title	Carrying out Workplace Interaction
Module Descriptor	This unit covers the knowledge, skills and attitude required to carry out workplace interaction. It specifically includes interpreting workplace communication and etiquette, reading and understanding workplace documents, participating in workplace meetings and discussions and practicing professional ethics at workplace.
Nominal Hours	**15 Hours**
Learning Outcome	After completing the practice of the module, the trainees will be able to perform the following jobs: 1. Interpret workplace communication and etiquette 2. Read and understand workplace documents 3. Participate in workplace meetings and discussions 4. Practice professional ethics at workplace

Learning Outcome -1: Interpret workplace communication and etiquette	
Assessment Criteria	1. Workplace code of conducts is interpreted as per organizational guidelines 2. Appropriate lines of communication are maintained with supervisors and colleagues 3. Workplace interactions are conducted in a courteous manner to gather and convey information 4. Questions about routine workplace procedures and matters are asked and responded as required
Conditions and Resources	• Workplace or Simulated Workplace • Workplace code of conducts • CBLM • Handout • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker
Contents	1. Workplace code of conducts 2. courteous manner 2.1 Effective questioning 2.2 Active listening 2.3 Speaking skills 3. Workplace procedures and matters 3.1 Notes 3.2 Agenda 3.3 Simple reports 3.3.1 Progress report 3.3.2 Incident report 3.4 Job sheets 3.5 Operational manuals 3.6 Brochures and promotional material 3.7 Visual and graphic materials 3.8 Standards 3.9 OSH information 3.10 Signs
Job/ Task/ Activity	1. Interpret workplace code of conducts 2. Demonstate line communication with supervisors and colleagues 3. Demonstate courteous manner to gather and convey information

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -2: Read and understand workplace documents	
Assessment Criteria	1. Workplace documents are interpreted as per standard. 2. Assistance is taken to aid comprehension when required from peers / supervisors 3. Visual information / symbols / signage's are understood and followed 4. Specific and relevant information are accessed from appropriate sources 5. Appropriate medium is used to transfer information and ideas
Conditions and Resources	• Workplace or Simulated Workplace • Workplace documents • Visual information / symbols / signage's • CBLM • Handout • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker
Contents	1 Workplace documents 2 Visual information / symbols / signage's 3 Appropriate sources 3.1 HR Department 3.2 Managers 3.3 Supervisors
Job/ Task/ Activity	1. Interpret workplace documents 2. Identify visual information / symbols / signage's 3. Identify appropriate sources for relevant information
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning

Learning Outcome -3: Participate in workplace meetings and discussions	
Assessment Criteria	1. Team meetings are attended on time and meeting procedures and etiquette are followed 2. Own opinions are expressed and others opinions are listened without interruption 3. Inputs are provided consistent with meeting purpose and meeting outcomes are implemented
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities
Contents	1 Meeting procedures and etiquette 2 Implementation technique of meeting outcomes
Job/ Task/ Activity	1. Practice etiquette and manner 2. Implement meeting outcomes
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -4: Practice professional ethics at workplace	
Assessment Criteria	1. Responsibilities as a team member are demonstrated and kept promises and commitments made to others 2. Tasks are performed in accordance with workplace procedures 3. Confidentiality is respected and maintained 4. Situations and actions considered inappropriate or which present a conflict of interest are avoided
Conditions and Resources	• Workplace or Simulated Workplace • Responsibilities as a team member • Conflict of interest • CBLM • Handout • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities
Contents	1 Responsibilities as a team member 2 Confidentiality of workplace 3 Conflict of interest
Job/ Task/ Activity	1. Interpret responsibilities as a team member 2. Interpret conflict of interest
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Unit of Competency	**Lead Small Team**
Unit Code	**GU-04-L4-V1**
Module Title	**Leading small team**
Module Descriptor	This module covers the knowledge, skills and attitudes required to lead small team It specifically includes the task of providing team leadership, assigning responsibilities, setting performance expectations for team members and supervising team performance
Nominal Hours	**20 Hours**
Lerning Outcome	After completing the practice of the module, the trainees will be able to perform the following jobs: 1. Provide team leadership 2. Assign responsibilities 3. Set performance expectations for team members 4. Supervise team performance

Learning Outcome -1: Provide team leadership	
Assessment Criteria	1. Work requirements are identified and presented to team members 2. Reasons for instructions and requirements are communicated to team members 3. Team members' queries and concerns are recognized, discussed and dealt with
Conditions and Resources	• Workplace or Simulated Workplace • Work requirements • Team members' queries and concerns • CBLM • Handout • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device
Contents	1. Work requirements 1.1 Client Profile 1.2 Assignment instructions 2. Team members' queries and concerns 2.1 Roster 2.2 Shift details.
Job/ Task/ Activity	1. Identify work requirements 2. Identify team members' queries and concerns

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	1. Written Test 2. Demonstration 3. Oral questioning 4. Portfolio

Learning Outcome -2: Assign responsibilities	
Assessment Criteria	1. Duties, and responsibilities are allocated having regard to the skills, knowledge and attitudes required to properly undertake the assigned task 2. Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible.
Conditions and Resources	• Workplace or Simulated Workplace • Duties, and responsibilities of team members regarding assigned task; • Workplace staff regulation • CBLM • Handout • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device
Contents	1. Duties, and responsibilities of team members regarding assigned tasks;
Job/ Task/ Activity	1. Perform duties and responsibilities to properly undertake the assigned tasks
Training Method	1. Discussion 2. Presentation 3. Demonstration 4. Guided Practice 5. Individual Practice 6. Project Work 7. Problem Solving 8. Brainstorming

Assessment Method	1. Written Test 2. Demonstration 3. Oral questioning 4. Portfolio

Learning Outcome -3: **Set performance expectations for team members**	
Assessment Criteria	1. Performance expectations are established based on client needs and according to assignment requirements 2. Performance expectations are based on individual team members' duties and area of responsibility 3. Performance expectations are discussed and directed to implement in the workplace
Conditions and Resources	• Workplace or Simulated Workplace • Perfomance expectations • CBLM • Handout • Paper, Pen, Pencil, • Internet Facilities • White Board and marker
Contents	1. Performance expectations 1.1 Based on client needs 1.2 Based on individual team members' duties and area of responsibility 1.3 Discussed and directed to implement in the workplace
Job/ Task/ Activity	1. Identify performance expectations based on client need and individual team members' duties and area of responsibility
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	1. Written Test 2. Demonstration 3. Oral questioning 4. Portfolio

Learning Outcome -4: **Supervise team performance**	
Assessment Criteria	1. Monitoring of performance are taken place against defined performance criteria and / or assignment instructions and corrective action taken if required 2. Team members are provided feedback, positive support and advice on strategies to overcome any deficiencies 3. Performance issues which cannot be rectified or addressed within the team are referenced to appropriate personnel 4. Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on clients' / customers' needs and satisfaction 5. Team operations are monitored to ensure that employer / client needs and requirements are met 6. Follow-up communication is provided on all issues affecting the team 7. All relevant documentation is completed
Conditions and Resources	• Workplace or Simulated Workplace • Supervision procedure • CBLM • Handout • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker
Contents	1. Monitoring of performance 1.1 Formal process 1.2 Informal process 2. Team members provoded feedback 2.1 Formal process 2.2 Informal process 2.3 Sandwich process 3. Performance issues 3.1 Work output 3.2 Work quality 3.3 Team participation 3.4 Compliance with workplace protocols 3.5 Safety 3.6 Customer service
Job/ Task/ Activity	1. Demonstate: 1.1 monitoring of performance is taken place against defined performance criteria 1.2 providing feedback to team member 1.3 monitoring team operations 1.4 follow-up team activities

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	1. Written Test 2. Demonstration 3. Oral questioning 4. Portfolio

Sector Specific Module

Unit of Competency	**Interpret the Scenario and Environmental Issues of Plastic Sector**
Unit Code	**SU-PS-L3-02-V1**
Module Title	Interpreting the scenario and environmental issues of plastic sector
Module Descriptor	This unit covers the knowledge, skills and attitudes required to interpret the scenario and environmental issues of plastic sector It specifically includes the tasks of identifying organizational structure within the sector, recognizing history of plastic Industries in Bangladesh, identifying scenario of Plastic Industries, list prime export markets, interpreting and mitigating environmental issues and following green practices
Nominal Hours	**30 Hours**
Learning Outcome	After completing the practice of the module, the trainees will be able to perform the following jobs: 1. Identify organizational structure within the sector 2. Recognize history of plastic Industries in Bangladesh 3. Identify scenario of Plastic Industries 4. List prime export markets 5. Interpret & mitigate environmental issues 6. Follow green practices

Learning Outcome -1: Identify organizational structure within the sector	
Assessment Criteria	1. Profile of the plastic sector of Bangladesh is explained; 2. Scope, nature and major fields of the plastic sector are identified; 3. Occupations or trade names of the plastic sector are identified; 4. Employment conditions are identified in line with the plastic sector of Bangladesh; 5. Relevant sectoral chapter of policies and guidelines are identified and interpreted.
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device

Contents	1. Major fields 1.1 Toys 1.2 Household item 1.3 Furniture 1.4 Garment accessories and products 1.5 Medical accessories 1.6 Packaging product 1.7 Automobile parts 1.8 Shoe accessories 1.9 Pipe and fitting 1.10 Sanitary fitting 1.11 Agriculture accessories 1.12 Fashion item 1.13 Stationary item 1.14 Water purification Information 2. Occupations 2.1 Machine operator 2.2 Supervisor 2.3 Mold maker 2.4 Mold designer 2.5 Quality controller 2.6 Laboratory technician 2.7 Color master 2.8 Maintenance engineer 2.9 Process engineer 2.10 Production in charge 3. Policies 3.1 Industry policy 3.2 Plastic industry development policy 3.3 Export policy
Job/ Task/ Activity	1. Identify major fields of the plastic srector in Bangladesh 2. Identify occupations or trade names of the plastic sector 3. Interpret relevant sectoral chapter of policies and guidelines
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration

	• Oral questioning • Portfolio

Learning Outcome -2: Recognize history of plastic Industries in Bangladesh	
Assessment Criteria	1. Background of plastic industries in Bangladesh is inferred with reference to the past history, present status and expected future trends; 2. Importance of the plastic industries in relation to Bangladesh labour market is stated with emphasis on manpower and economic impact; 3. Present and projected future trends and technologies relevant to industries are summarized; 4. Changes in the trends and technologies relevant to the sector is explained.
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device
Contents	1. Background of plastic industries 1.1 History of Bangladesh plastic Industries 1.2 Economic contribution 1.3 Gender dynamics of plastic industry in Bangladesh. 1.4 Wages & efficiency in the plastic industry 1.5 Compliance
Job/ Task/ Activity	1. Interpret background of plastic industries in Bangladesh 2. Interpret importance of the plastic industries in relation to Bangladesh labour market
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -3: Identify scenario of Plastic Industries	
Assessment Criteria	1. Scope and nature of major departments of the plastic industries are identified; 2. Role and responsibilities of individuals are identified in relation to the department and organization as a whole; 3. Machines used in different departments are identified.
Conditions and Resources	• Workplace or Simulated Workplace • Machines used in different departments • Role and responsibilities of individuals • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device
Contents	1. Major departments 1.1 Production 1.2 Packaging 1.3 Quality control 1.4 Maintenance 1.5 Store 1.6 Inventory • Sales and marketing • Distribution • Domestic • Customized • Export 1.7 Human Resources 1.8 Accounting and finance 1.9 Administration & Compliance 2. Machines 2.1 Injection molding machine 2.2 Blow molding machine 2.3 Compression molding machine 2.4 Pet blow machine 2.5 Extruder machine 2.6 Stress Blow molding (SBM) machine 2.7 Injection blow molding (IBM) machine 2.8 Electric blow molding machine 2.9 Cap Closer machine (CCM) 2.10 Vacuum forming machine 2.11 Rotational molding machine 2.12 Sealing machine

	2.13 Printing machine 2.14 Calendaring
Job/ Task/ Activity	1. Identify scope and nature of major departments of the plastic industries 2. Identify role and responsibilities of individuals in relation to the department and organization as a whole 3. Identify machines used in different departments.
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -4: List prime export markets	
Assessment Criteria	1. The types of prime export markets are categorized on the basis of their current and future potential; 2. Export marketing process is interpreted
Conditions and Resources	• Workplace or Simulated Workplace • Export marketing process • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device
Contents	1. Types of prime export markets 2. Export marketing process
Job/ Task/ Activity	1. Categorize the types of prime export markets on the basis of their current and future potential 2. Interpret export marketing process
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -5: Interpret and mitigate environmental issues	
Assessment Criteria	1. Use of plastic product and material are identified and interpreted; 2. Issues related to improper usages and impact of plastic are interpreted; 3. Plastic waste management procedures are maintained.
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device
Contents	1. Use of plastic product and material 2. Plastic waste management procedures
Job/ Task/ Activity	3. Interpret use of plastic product and material 4. Interpret plastic waste management procedures
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -6: Follow green practices	
Assessment Criteria	1. Waste is Minimized by reducing consumption, reusing items, and recycling materials; 2. Energy is Conserved by using different options; 3. Water is saved by fixing leaks, using water-saving fixtures, and practicing mindful water use; 4. Eco-Friendly Products are used; 5. public transport, carpool, bike, or walk are used whenever possible; 6. reusable bags, bottles, and containers are used; 7. Follow local waste management policies; 8. Trees are planted and Green Spaces are maintained.
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device
Contents	1. Different options of energy conservation 1.1 Use energy-efficient appliances and lighting. 1.2 Turn off lights and equipment when not in use. 1.3 Utilize natural light and ventilation where possible. 1.4 Solar-powered lights 2. Eco-Friendly Products 2.1 Choose biodegradable 2.2 Non-toxic 2.3 Sustainably sourced materials. 2.4 Reusable food wraps 2.5 LED light bulbs 2.6 Reusable shopping bags 2.7 Reusable containers 2.8 Bicycles and electric scooters 2.9 Recycles bin 2.10 Flower base
Job/ Task/ Activity	1. Interpret minimizing of waste by reducing consumption, reusing items, and recycling materials; 2. Identify eco-friendly products.

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Occupation Specific Module

Unit of Competency	**Interpret the application process of Machine, Tools, Equipment and Plastic Raw Material.**
Unit Code	**OU-PS-PIMMO-01-L3-V1**
Module Title	**Interpreting the application process of machine, tools, equipment and plastic raw material.**
Module Descriptor	This unit covers the knowledge, skills and attitude required to Interpret the application process of machine, tools, equipment and plastic raw material. It specifically includes the tasks of preparing for work, interpreting the functionality of machine, tools and equipment and application process of raw material
Nominal Hours	**30 Hours**
Learning Outcome	After completing the practice of the module, the trainees will be able to perform the following jobs: 1. Prepare for work 2. Interpret the functionality of machine, tools and equipment 3. Interpret the application process of raw material

Learning Outcome -1: Prepare for work	
Assessment Criteria	1. Safe work practices are followed throughout the work process; 2. Personal Protective Equipment (PPE) is identified and used; 3. Safety signs and symbols are identified; 4. Incident are identified and mitigated as per jurisdiction of employee; 5. Personal hygiene is maintained; 6. Machine accessories and supporting machines are identified; 7. Tools, equipment, measuring instrument and material are identified.
Conditions and Resources	• Workplace or Simulated Workplace • Machine accessories and supporting machines • Tools, equipment, measuring instrument and material • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities
Contents	1. Safe work practices 1.1 Use PPE 1.2 Use fire extinguisher 1.3 Response emergency situation 1.4 Identify hazard 1.5 Control hazards

	1.6 Measure risk 1.7 Use first aid 1.8 Report uncontrolled hazards 2. Personal Protective Equipment (PPE) 2.1 Heat resistant hand gloves 2.2 Apron 2.3 Safety shoes 2.4 Mask 2.5 Safety googles 2.6 Ear plugs 2.7 Safety helmet 3. Incident 3.1 Electrical 3.2 Accident 3.3 Pathway movement 3.4 Smoke 3.5 Flash cutting 3.6 Burn from heater and purging 4. Machine accessories 4.1 Hopper loader 4.2 Hopper dryer 4.3 Hot runner controller 4.4 Auto conveyer 4.5 Finishing table 4.6 Robotic arm 5. Supporting machines 5.1 Air compressor 5.2 Cooling tower 5.3 Water chiller 5.4 Robot 6. Tools 6.1 Allen key set 6.2 Open ended wrench 6.3 Adjustable wrench 6.4 Pipe wrench 6.5 Nose pliers 6.6 Diagonal Cutting pliers 6.7 Neon tester 6.8 Torque wrench 6.9 Ring spanner 6.10 Clamp wrench 6.11 Screwdriver set 6.12 Ball peen hammer

	6.13 Mallet 6.14 Hand grinder 6.15 Industry knife 6.16 Air nipple 6.17 Water nipple 6.18 Sprue blockage cleaning rod (copper rod) 7. Equipment 7.1 Grinding machine 7.2 Mixer machine 7.3 Crashing machine 7.4 Sealing machine 7.5 Crane 7.6 Chain block 7.7 Hydraulic trolly 8. Maintenance Material 8.1 Thread tape 8.2 Insulation tape 8.3 Hose clamp 8.4 Cable tie 8.5 Hose pipe 8.6 Grease 8.7 Lubricant 8.8 Cotton waste
Job/Task/Activity	1. Follow safe work practices and use PPE 2. Identify safety sign and symbol 3. Identify incident and resolve 4. Identify machine accessories and supporting machines 5. Identify tools, equipment, measuring instrument and material;
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -2: Interpret the functionality of machine, tools and equipment	
Assessment Criteria	1. Machine and machine unit are interpreted; 2. Usages of machine accessories are interpreted; 3. Functionality of tools and equipment are checked; 4. Application of tools and equipment are interpreted; 5. Machine parameters are read and interpreted.
Conditions and Resources	• Workplace or Simulated Workplace • Machine and machine unit • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • PPE
Contents	1. Machine 1.1 Vertical injection molding 1.2 Horizontal injection molding 2. Machine unit 2.1 Injection • Hopper • Heaters • Nozzle • Hydraulic drive • Screw & barrel • Survo motor 2.2 Clamping • Fixed platen • Moving platen • Adjustable platen/Rear platen
Job/Task/Activity	1. Interpret machine and machine unit 2. Interpret usages of machine accessories 3. Check functionality of tools and equipment 4. Interpret machine parameters

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning

Learning Outcome -3: **Interpret the application process of raw material**	
Assessment Criteria	1. Plastic and types of plastics are interpreted; 2. Plastic raw material is listed; 3. Application of plastic material are interpreted.
Conditions and Resources	• Workplace or Simulated Workplace • Plastic raw materials • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Plastic extrusion machine
Contents	1. Types of plastics 1.1 Thermo plastic 1.2 Thermoset plastic 2. Plastic raw material **A. Thermo plastic** 2.1 Polyethylene • Linear Low-Density Polyethylene (LLDPE) • Low Density Polyethylene (LDPE) • High Density Polyethylene (HDPE) 2.2 Polypropylene (PP) 2.3 Polystyrene (PS) • General Purpose Polystyrene (GPPS) • High Impact Polystyrene (HIPS) 2.4 Polyvinyl chloride (PVC) 2.5 Polyethylene Tereph Thalate (PET)

	2.6 Polycarbonate (PC) 2.7 Acrylonitrile Butadiene Styrene (ABS) 2.8 Random copolymer (RCP) 2.9 Styrene acrylonitrile (SAN) 2.10 Nylon/ Polyamide 2.11 Acrylic (PMMA) 2.12 Polyoxymethylene (POM) 2.13 Polytetrafluoroethylene (Teflon) (PTFE) 2.14 Polyphenyleneoxide (PPO) **B. Thermoset plastic** 2.15 Epoxy resin 2.16 Phenolic resin (Bakelite) 2.17 Urea formaldehyde (UF) 2.18 Melamine formaldehyde (MF) 2.19 Unsaturated polyester resin (UP) 2.20 Silicone resin 2.21 Polyurethane (PU) 2.22 Vinyl ester resin 2.23 Alkyd resin 2.24 Cyanate ester resin 2.25 Amino plastics 2.26 Diallyl phthalate (DAP) 2.27 Furan resin 2.28 Bismaleimide (BMI) 2.29 Polyimide resin 2.30 Phenol formaldehyde (PF)
Job/Task/Activity	1. Intrerpret plastic and types of plastics 2. List plastic raw material 3. Interpret application of plastic material
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning

Unit of Competency	**Perform Mold Settings**
Unit Code	**OU-PS-PIMMO-L3-02-V1**
Module Title	Performing mold settings
Module Descriptor	This unit covers the knowledge, skills and attitude required to perform mold settings. It specifically includes the tasks of preparing for mold setting, load mold, unload mold from machine and maintain workplace, tools, equipment and materials
Nominal Hours	**55 Hours**
Learning Outcome	After completing the practice of the module, the trainees will be able to perform the following jobs: 1. Prepare for mold setting 2. Load mold 3. Unload mold from machine 4. Maintain workplace, tools, equipment and materials

Learning Outcome -1: Prepare for mold setting	
Assessment Criteria	1. Safe work practices are followed throughout the work process; 2. Personal Protective Equipment (PPE) is worn as per job requirement; 3. Tools, equipment and maintenance material are selected and collected; 4. Mold is selected and collected according to the job requirement; 5. Mold dimension is measured as per job specification; 6. Machine is selected according to the machine specification
Conditions and Resources	• Workplace or Simulated Workplace • Machine • Tools, equipment, measuring instrument and material • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities
Contents	1. Safe work practices 1.1 Use PPE 1.2 Use fire extinguisher 1.3 Response emergency situation 1.4 Identify hazard 1.5 Control hazards 1.6 Measure risk 1.7 Use first aid

	1.8 Report uncontrolled hazards 2. Personal Protective Equipment (PPE) 2.1 Heat resistant hand gloves 2.2 Apron 2.3 Safety shoes 2.4 Mask 2.5 Safety googles 2.6 Ear plugs 2.7 Safety helmet 3. Tools and equipment 3.1 Allen key set 3.2 Open ended wrench 3.3 Adjustable wrench 3.4 Ring spanner 3.5 Screwdriver (star and flat) 3.6 Air nipple 3.7 Water nipple 3.8 Hydraulic trolley 4. Maintenance material 4.1 Thread tape 4.2 Hose clamp 4.3 Cable tie 4.4 Hose pipe 4.5 Hydraulic pipe 5. Mold dimension 5.1 Length 5.2 Width 5.3 Height 6. Machine specification 6.1 Mold size 6.2 Shot weight 6.3 Machine clamping force 6.4 Tie bar distance 6.5 Maximum & minimum opening stroke 6.6 Ejector stroke 6.7 Injection screw type 6.8 Clamping type
Job/Task/Activity	1. Follow safe work practices and use PPE 2. Identify tools, equipment, measuring instrument and material; 3. Select and collect mold 4. Measure mold dimension 5. Select machine according to the machine specification

	requirement
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfoloi

Learning Outcome -2: Load mold	
Assessment Criteria	1. Connecting rod is attached to join the molds parts 2. I-lock is attached with mold; 3. Crane chain / rope is attached with I-lock as per Standard Operating Procedure (SOP); 4. Mold is set into the machine by using clamp as per SOP. 5. Water and air line is adjusted; 6. Hydraulic pipe is set, if required.
Conditions and Resources	• Workplace or Simulated Workplace • Mold • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Required raw materials • Plastic molding machine
Contents	1. Procedure of loading mold
Job/Task/Activity	1. Load the mold
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -3: Unload mold from machine	
Assessment Criteria	1. Water pipe is off and removed from mold; 2. Dry cycle is checked; 3. Hot shot is carried out to remove moisture from mold; 4. Greasing is performed to the mold; 5. Crane chain/ rope is attached with mold I-lock as per SOP; 6. Clamps are detached from machine;

	7. Moving platoon is separated form mold and mold is removed by using crane/chain kappa.
Conditions and Resources	• Workplace or Simulated Workplace • Mold • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Tools and equipment • Necessary PPE • Plastic extrusion blows molding machine
Contents	1. Unload procedure of mold from machine
Job/Task/Activity	1. Unload mold from machine
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning

Learning Outcome -4: Maintain workplace, tools, equipment and materials	
Assessment Criteria	1. Work area is cleaned in accordance with workplace procedures; 2. Unused materials are stored for re-use or disposed following workplace procedures; 3. Waste and scrap materials are disposed with following workplace procedures; 4. Inventory of tools equipment are conducted and recorded as per checklist; 5. Tools and equipment are cleaned and stored as per manufacturer recommendation in appropriate location.

Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Tools and equipment • Necessary PPE
Contents	1. Maintenance procedure of workplace, tools, equipment and materials
Job/Task/Activity	1. Clean work area in accordance with workplace procedures; 2. Re-use or dispose unused materials are store following workplace procedures; 3. Conduct and record inventory of tools equipment as per checklist;
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Unit of Competency	**Operate Machine**
Unit Code	**OU-PS-PIMMO-L3-03-V1**
Module Title	Operating Machine
Module Descriptor	This unit covers the knowledge, skills and attitude required to operate machine It specifically includes the tasks of preparing for machine operation, setting machine, performing machine operation, checking product and maintaining workplace, tools, equipment and materials
Nominal Hours	**140 Hours**
Lerning Outcome	After completing the practice of the module, the trainees will be able to perform the following jobs: 1. Prepare for machine operation 2. Set machine 3. Perform machine operation 4. Check product 5. Maintain workplace, tools, equipment and materials

Learning Outcome -1: Prepare for machine operation	
Assessment Criteria	1. Safe work practices are followed throughout the work process; 2. Personal Protective Equipment (PPE) is worn as per job requirement. 3. Shift handover and takeover process is carried out as per company format; 4. Work schedule is collected from authority; 5. Tools, equipment and material are selected and collected as per job requirement; 6. Machine and machine surface is cleaned according to the workplace procedure; 7. Mold and machine are selected as per job requirement; 8. Mold is set as per product specification, if required; 9. Nozzle is set with mold for operation. specification requirement.
Conditions and Resources	• Workplace or Simulated Workplace • Machine • Tools, equipment, measuring instrument and material • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities
Contents	1. Safe work practices 1.1 Use PPE

	1.2 Use fire extinguisher 1.3 Response emergency situation 1.4 Identify hazard 1.5 Control hazards 1.6 Measure risk 1.7 Use first aid 1.8 Report uncontrolled hazards 2. Personal Protective Equipment (PPE) 2.1 Heat resistant hand gloves 2.2 Apron 2.3 Safety shoes 2.4 Mask 2.5 Safety googles 2.6 Ear plugs 2.7 Safety helmet 2.8 Insulated mat (rubber mat) 3. Tools 3.1 Anti-cutter/ blade 3.2 Nose pliers 3.3 Cutting plier 3.4 Shovel 3.5 Copper rod 3.6 mallet 3.7 Hot gun 3.8 Grease gun 4. Equipment 4.1 Mixing machine 4.2 Crasher machine 5. Raw material 5.1 Plastic granules 5.2 Color batch/color pigment
Job/Task/Activity	1. Follow safe work practices and use PPE 2. Identify tools, equipment, measuring instrument and material; 3. Select mold and machine as per job requirement; 4. Measure mold dimension 5. Set mold as per product specification

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -2: Set machine	
Assessment Criteria	1. Power supply and machine barrel heat is checked and ensured; 2. Mold setting is checked for proper alignment; 3. Color is mixed with plastic granule using mixer machine as per color mixing ratio; 4. Mixing material are poured into the hopper maintaining safety procedure; 5. Hoper dryer temperature is set as per material requirement; 6. Functions of mold and machine water cooling system are ensured
Conditions and Resources	• Workplace or Simulated Workplace • Machine • CBLM • Handout • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Required raw materials • Plastic stretch blow molding machine
Contents	1. Machine setting procedure
Job/Task/Activity	1. Check and ensure machine barrel heat 2. Check mold setting for proper alignment 3. Mix color with plastic granule using mixer machine as per color mixing ratio; 4. Pour mixing material into the hopper maintaining safety procedure; 5. Set hoper dryer temperature as per material requirement; 6. Ensure functions of mold and machine water cooling system
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Porfolio

Learning Outcome -3: Perform machine operation	
Assessment Criteria	1. Check temperature as per materials processing temperature; 2. Parameters are set in dashboard as per product specification; 3. Pretest is performed and necessary adjustment is made, if required; 4. Water and air line is positioned on; 5. Machine performance is monitored by collecting and checking product; 6. Machine safety is ensured during operation
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Tools and equipment • Necessary PPE • Molding machine
Contents	1. Parameter 1.1 Mold adjusts 1.2 Temperature 1.3 Clamping 1.4 Nozzle setting 1.5 Injection 1.6 Holding 1.7 Charging 1.8 Ejector 1.9 Core setting 1.10 Delay time 1.11 Mold controller set 2. Machine performance monitoring procedure
Job/Task/Activity	1. Check temperature as per materials processing temperature; 2. Set parameters in dashboard as per product specification 3. Make position ON for water and air line; 4. Monitor machine performance by collecting and checking product; 1. Ensure machine safety during operation.

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning

Learning Outcome -4: Check product	
Assessment Criteria	1. Product are inspected for defect identification; 2. De-flashing is carried out as per product specification; 3. Product defect causes are identified; 4. Measures are taken to mitigate problem within own responsibilities; 5. Faulty products are separated and crashed.
Conditions and Resources	• Workplace or Simulated Workplace • Molding Machine • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Tools and equipment • Necessary PPE
Contents	1. Product cheking procedure
Job/Task/Activity	1. Inspect product for defect identification 2. Carry out de-flashing as per product specification; 3. Identify product defect causes; 4. Take measures to mitigate problem; 5. Separate and crash faulty products.

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -5: Maintain workplace, tools, equipment and materials	
Assessment Criteria	1. Machine is shutdown according to the SOP; 2. Mold core and cavity are greased if the machine is shutdown for more than 24 hours; 3. Moving components of machine are cleaned and lubricated as per standard procedure; 4. Tools and equipment are stored as per workplace procedure; 5. Faulty tools and equipment are separated; 6. Workplace is cleaned according to the workplace procedure; 7. Waste materials are disposed of as per environmental procedure.
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Tools and equipment • Necessary PPE
Contents	1. Maintenance procedure of workplace, tools, equipment and materials
Job/Task/Activity	1. Shutdown machine according to the SOP; 2. Grease mold core and cavity if the machine is shutdown for more than 24 hours; 3. Clean and lubricate moving components of machine as per standard procedure; 4. Store tools and equipment as per workplace procedure; 5. Separate faulty tools and equipment; 6. Clean workplace according to the workplace procedure; 7. Dispose waste materials of as per environmental procedure
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming

Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Unit of Competency	**Perform Visual Identification of Product Defect**
Unit Code	**OU-PS-PIMMO-04-L3-V2**
Module Title	Performing visual identification of product defect
Module Descriptor	This unit covers the knowledge, skills and attitudes required to perform visual identification of product defect. This specifically includes the task of preparing for work, identifying and rectifying defect and maintaining workplace, tools, equipment and materials
Nominal Hours	**20 Hours**
Lerning Outcome	After completing the practice of the module, the trainees will be able to perform the following jobs: 1. Prepare for work 2. Identify and rectify defect 3. Maintain workplace, tools, equipment and materials

Learning Outcome -1: Prepare for work	
Assessment Criteria	1. Safe work practices are followed throughout the work process; 2. Personal protective equipment (PPE) is worn as per job requirement; 3. Tools and material are selected and collected as per job requirement;
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Tools and materials
Contents	1. Safe work practice 1.1 Use PPE 1.2 Use fire extinguisher 1.3 Response emergency situation 1.4 Identify hazard 1.5 Control hazards 1.6 Measure risk 1.7 Use first aid 1.8 Report uncontrolled hazards 2. Personal Protective Equipment (PPE) 2.1 Heat resistant hand gloves

	2.2 Apron 2.3 Safety shoes 2.4 Mask 2.5 Safety googles 2.6 Ear plugs 2.7 Safety helmet 3. Tools and material selection procedure 4. Product collection procedure
Job/Task/Activity	1. Follow safe work practices and use PPE; 2. Select tools and material as per job requirement; 3. Collect product according to the workplace procedure
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -2: Identify and rectify defect	
Assessment Criteria	1. Product are inspected for defect identification; 2. Product defect causes are identified; 3. Defective products are segregated as per range of rectification; 4. Remedial measures are taken to rectify defect; 5. Unrectified products are crushed as per company procedure; 6. Report is prepared in company format and submitted to the designated authority
Conditions and Resources	• Workplace or Simulated Workplace • Products • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker

Contents	1. Product defect 1.1 Short molding 1.2 Spot 1.3 Flash 1.4 Silver stick 1.5 Shrinkage 1.6 Short weight 1.7 Over weight 1.8 Air bubble 1.9 Blow hole 1.10 Burn mark 1.11 Warpage 1.12 Scratch 1.13 Over cut 1.14 Wave mark 1.15 Color mark 1.16 Color deviation 1.17 Flow mark 1.18 Sink mark 1.19 Runner point 1.20 Weld mark 1.21 Male adjustment of two parts 1.22 Crack 1.23 Hole 2. Cause of product defects 2.1. Injection pressure, speed and time 2.2. Injection holding time 2.3. Cooling time 2.4. Improper water circulation 2.5. Improper water-cooling temperature 2.6. Temperature 2.7. Material grade 2.8. Mold problem 2.9. Charging problem 2.10. Material moisture content 2.11. Lack of material proper distribution 2.12. Back pressure 2.13. Material leakage 2.14. Cushion 2.15. Fill time 2.16. Pack time 3. Remedial measures 3.1 Adjust pressure and speed

	3.2 Adjust temperature 3.3 Use proper material grade 3.4 Adjust cooling time 3.5 Adjust holding time 3.6 Adjust holding pressure 3.7 Checking mold 3.8 Suck back 3.9 Adjust back pressure 3.10 Adjust cooling water temperature
Job/Task/Activity	1. Inspect product for defect identification; 2. Identify product defect causes; 3. Segregate defective products as per range of rectification; 4. Take remedial measures to rectify defect; 5. Crush unrectified products as per company procedure; 6. Prepare report in company format and submitted to the designated authority;
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -3: Maintain workplace, tools, equipment and materials	
Assessment Criteria	1. Work area is cleaned in accordance with workplace procedures; 2. Unused materials are stored for re-use or disposed following workplace procedures; 3. Waste and scrap materials are disposed with following workplace procedures; 4. Inventory of tools equipment are conducted and recorded as per checklist; 5. Tools and equipment are cleaned and stored as per manufacturer recommendation in appropriate location.
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Tools and equipment • Necessary PPE
Contents	2. Maintenance procedure of workplace, tools, equipment and materials
Job/Task/Activity	1. Clean work area in accordance with workplace procedures; 2. Store unused materials for re-use or dispose following workplace procedures; 3. Dispose waste and scrap materials with following workplace procedures; 4. Conduct inventory of tools equipment and record as per checklist; 5. Clean and store tools and equipment as per manufacturer recommendation in appropriate location.
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming

Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Unit of Competency	**Perform Minor Machine Servicing and Maintenance**
Unit Code	**OU-PS-PIMMO-05-L3-V2**
Module Title	Performing minor machine servicing and maintenance
Module Descriptor	This unit covers the knowledge, skills and attitude required to perform minor machine servicing and maintenance; It specifically includes the tasks of performing routine maintenance, dentifying and rectify minor machine problem and maintaining workplace, tools, equipment and materials
Nominal Hours	**30 Hours**
Learning Outcome	After completing the practice of the module, the trainees will be able to perform the following jobs: 1. Perform routine maintenance 2. Identify and rectify minor machine problem 3. Maintain workplace, tools, equipment and materials

Learning Outcome -1: Perform routine maintenance	
Assessment Criteria	1. Safe work practices are followed throughout the work process; 2. Personal Protective Equipment (PPE) is worn as per job requirement; 3. Tools and material are collected as per job requirement; 4. Preventive maintenance works are determined as per preventive maintenance schedule; 5. Workplace and machine cleanliness is checked; 6. Hydraulic oil level is checked and filled up according to the instruction given in machine operation manual; 7. Water and air line is checked for machine and mold; 8. Mold clamping nuts tightening is checked at the beginning of shift; 9. Lubrication and greasing of machine parts is performed
Conditions and Resources	• Workplace or Simulated Workplace • Machine • Tools, equipment, measuring instrument and material • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities
Contents	1. Safe work practices 1.1 Use PPE 1.2 Use fire extinguisher 1.3 Response emergency situation

	1.4 Identify hazard 1.5 Control hazards 1.6 Measure risk 1.7 Use first aid 1.8 Report uncontrolled hazards 2. Personal Protective Equipment (PPE) 2.1 Heat resistant hand gloves 2.2 Apron 2.3 Safety shoes 2.4 Mask 2.5 Safety googles 2.6 Ear plugs 2.7 Safety helmet 3. Tools 3.1 Neon tester 3.2 Multimeter 3.3 Digital sensing tester 3.4 Screwdriver 3.5 Combination pliers 3.6 Adjustable wrench 3.7 Torque wrench 3.8 Grip vise 3.9 Mallet 3.10 Pipe wrench 3.11 Allen key set 3.12 Open ended wrench 4. Procedure of routine maintenance
Job/Task/Activity	1. Follow safe work practices and use PPE 2. Collect tools and material as per job requirement; 3. Check workplace and machine cleanliness; 4. Check and fill hydraulic oil level up according to the instruction given in machine operation manual; 5. Check water and air line for machine and mold; 6. Check mold clamping nuts tightening at the beginning of shift; 7. Perform lubrication and greasing of machine parts

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -2: Identify and rectify minor machine problem	
Assessment Criteria	1. Machine is inspected according to the manufacture manual; 2. Machine minor problems are identified; 3. Oil leakage is checked and the causes are identified; 4. Abnormal noise is checked and the causes are identified; 5. Oil temperature is checked as per standard Operating Procedure (SOP); 6. Loose machine parts are tightened as per standard torque; 7. Identified minor machine problems are rectified as per manufacturer manuals; 8. Maintenance issues are reported to the designated authority.
Conditions and Resources	• Workplace or Simulated Workplace • Machine • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Required raw materials
Contents	1. Machine minor problems 1.1 Loose thermocouple / heater 1.2 Loose valve connection 1.3 Jam filter (Auto loader) 1.4 Jam water filter (water line strainer) 1.5 Air filter jam 1.6 Loose nozzle 2. Procedure of rectification of machine minor problem
Job/Task/Activity	1. Inspect machine according to the manufacture manual; 2. Identify machine minor problems; 3. Check oil leakage and identify the causes; 4. Check abnormal noise and identify the causes; 5. Check oil temperature as per Standard Operating Procedure (SOP); 6. Tight loose machine parts as per standard; 7. Rectify identified minor machine problems as per manufacturer manuals; 8. Report maintenance issues to the designated authority.

Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Learning Outcome -3: Maintain workplace, tools, equipment and materials	
Assessment Criteria	1. Work area is cleaned in accordance with workplace procedures; 2. Unused materials are stored for re-use or disposed following workplace procedures; 3. Waste and scrap materials are disposed with following workplace procedures; 4. Inventory of tools equipment are conducted and recorded as per checklist; 5. Tools and equipment are cleaned and stored as per manufacturer recommendation in appropriate location.
Conditions and Resources	• Workplace or Simulated Workplace • CBLM • Handout • Computer/Laptop • Multimedia Projector • Paper, Pen, Pencil and Eraser • Internet Facilities • White Board and marker • Audio video device • Tools and equipment • Necessary PPE
Contents	1. Maintenance procedure of workplace, tools, equipment and materials

Job/Task/Activity	1. Clean work area in accordance with workplace procedures; 2. Re-use or dispose unused materials are store following workplace procedures; 3. Conduct and record inventory of tools equipment as per checklist;
Training Method	• Discussion • Presentation • Demonstration • Guided Practice • Individual Practice • Project Work • Problem Solving • Brainstorming
Assessment Method	• Written Test • Demonstration • Oral questioning • Portfolio

Glossary

Assessment Criteria

The list of criteria by which the learning outcomes of a trainee are judged or not is called assessment criteria. It also provides guidance on what training methodology will be followed in the classroom, workshop and field.

Assessment Procedures

The technique followed to gather evidence for the purpose of recognizing a trainee for his or her specific competence is called an assessment method. It may include methods or techniques such as questionnaires, observations, third-party reports, interviews, simulations and portfolios.

Assessor

A person certified by a certification authority to assess a trainee's competency for certification is called an assessor.

Trainer

A trainer is a certified professional person who is capable of developing the competence of a trainee or a group of trainees in a particular occupation or trade. A trainer in skill development works as a trainer, assessor, training designer and developer and training supervisor.

National Certificate of Competence

A certificate of proficiency awarded to a trainee who has attained a qualification approved by a National Skill Development Authority for a particular level of the National Qualification Framework.

Statement of Achievement

Certificate issued by the Skill Development Authority to the trainee who has achieved proficiency in any one or more Unit of Competency in the assessment.

Evidence

Evidence is the single attainment document or determinant of a trainee's competency. This evidence is collected from multiple sources in multiple ways.

Course design

It is the main component of Competency Based Curriculum. These include course and course descriptions, qualification levels, units of competence, learning outcomes, course structure, competency breakdowns, assessment methods, trainer and assessor qualifications and a list of all resources.

Course Description

The course description includes the relevance of the proposed course to industry, enterprise or community requirements and skill acquisition upon completion of training.

Course Learning Outcome

Course ``Learning'' describes the competencies students will acquire upon successful completion of the course modules.

Course Structure
It describes the modules sequentially. The nominal duration of each module is also specified in the course structure.

Course Title
The name of the course given from the competency analysis is the course title. It gives a clear idea of what is in the course.

Course delivery
The description of how a course will be delivered in a classroom or workshop is called course delivery.

Face to face training delivery
Traditional classroom-based teaching-learning system where the instructor plays the main role.

Learning conditions
The requirements under which the teaching-learning process and assessment will be conducted. This includes equipment and materials, training facilities, learning materials such as books, manuals, multi-media and other resources. It also specifies the scope or extent of equipment and facilities for conducting the assessment. It deals with the range of variables of the competency standard.

Competency Standards
A competency standard is a detailed description of the knowledge, skills, and behaviors required to perform a job assigned to an employee in the actual workplace. Competency standards are developed based on Learning Outcomes. It is also called industry standard as this standard is made under the direct supervision of the concerned industrial organization according to the needs of the concerned industrial organization.

Competency analysis
Describes how many modules there will be from each unit of competency.

Elements of Competence
An element of competency is an outcome-based set of skills by which a person must be able to perform a specified job to a standard specified in the unit of competency.

Evidence
Evidence that is collected to judge whether a learner has achieved a competency according to a competency standard. Evidence must be consistent with competency standards.

Skills
Skills are the ability of an employee to apply the knowledge and skills required to perform a job assigned to him/her at work.

Sandayan
The process of awarding a certificate when a student successfully completes all the units of a prescribed qualification is called certification.

Module descriptor
Module Descriptor Competency Standards relate to the Unit Descriptor and describe the overall purpose of the module with an emphasis on learning outcomes.

Module title
Module titles correspond to competency units of Competency Standard-AA. However, this does not mean that there will be one module for each competency unit. The number of modules is determined based on the learning outcomes/components covered in the competency unit. In some cases a competency unit may consist of two training modules or sometimes two competency units may be combined to form one training module. The module must be given a proper name. The name of the module will reflect the group of components/learning outcomes that the training module belongs to.

learning outcomes
Learning outcomes relate to competency standard elements. It describes what skills, knowledge and behaviors students will learn to effectively apply in the workplace after training. Action Verb is used to describe learning. Learning outcomes must include what actions must be taken, performance conditions and criteria. Any product, service or decision will be available as a result of the learning.

Performance standards
The standards against which an employee is expected to perform at work are performance standards that can be seen and measured. Each element of the competency standard has multiple performance standards.

Nominal time
The nominal time allocated against each learning outcome is called nominal time. In CBT the actual time for the learning outcome depends on the importance of the learning outcome and a learner's ability to achieve it. So the actual time is calculated based on the achievement of the learning outcome efficiently. Hence the nominal time learning outcome is payable. Achievement does not matter.

Resource
Machinery, equipment, goods and other physical facilities required for the implementation of the course.

Validation of Competency Based Curriculum

The Competency Based Curriculum for National Skills Certificate in Plastic Injection Moulding Machine Operation, Level-03 is validated by NSDA on 21 May 2024.

List of Members

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