TRAINING REGULATIONS

PLASTIC MACHINE OPERATION NC II

AUTOMOTIVE
(MANUFACTURING SUB-SECTOR)

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Superhighway, Taguig City, Metro Manila

Technical Education and Skills Development Act of 1994
(Republic Act No. 7796)

Section 22, "Establishment and Administration of the National Trade Skills Standards" of the RA 7796 known as the TESDA Act mandates TESDA to establish national occupational skill standards. The Authority shall develop and implement a certification and accreditation program in which private industry group and trade associations are accredited to conduct approved trade tests, and the local government units to promote such trade testing activities in their respective areas in accordance with the guidelines to be set by the Authority.

The Training Regulations (TR) serve as basis for the:

1. Competency assessment and certification;
2. Registration and delivery of training programs; and
3. Development of curriculum and assessment instruments.

Each TR has four sections:

Section 1 Definition of Qualification - refers to the group of competencies that describes the different functions of the qualification.

Section 2 Competency Standards - gives the specifications of competencies required for effective work performance.

Section 3 Training Standards - contains information and requirements in designing training program for certain Qualification. It includes curriculum design, training delivery; trainee entry requirements; tools, equipment and materials; training facilities; trainer's qualification; and institutional assessment.

Section 4 National Assessment and Certification Arrangements - describes the policies governing assessment and certification procedure

TABLE OF CONTENTS
AUTOMOTIVE MANUFACTURING SUB-SECTOR

PLASTIC MACHINE OPERATION NC II

TRAINING REGULATIONS FOR
PLASTIC MACHINE OPERATION NC II

SECTION 1 PLASTIC MACHINE OPERATION NC II QUALIFICATION

The PLASTIC MACHINE OPERATION NC II Qualification consists of competencies that a person must achieve to prepare molds for composites production, prepare materials for formulae, assemble materials and equipment for production, operate injection molding equipment and blow molding equipment, It also include competency to monitor process operations and to finish products and components

This Qualification is packaged from the competency map of the Automotive Industry (Manufacturing sector) as shown in Annex A.

The Units of Competency comprising this Qualification include the following:

Code No.	**BASIC COMPETENCIES**
500311105	Participate in Workplace Communication
500311106	Work in Team Environment
500311107	Practice Career Professionalism
500311108	Practice Occupational Health and Safety Procedures
Code No.	**COMMON COMPETENCIES**
ALT742201	Read, Interpret and Apply Engineering Drawings
ALT311202	Perform Mensuration and Calculation
ALT723203	Read, Interpret and Apply Specifications and Manuals
ALT723205	Perform Shop Maintenance
Code No.	**CORE COMPETENCIES**
ALT823301	Prepare Molds for Composites Production
ALT823302	Prepare Materials for Formulae
ALT823303	Assemble Materials and Equipment for Production
ALT823304	Operate Injection Molding Equipment
ALT823305	Operate Blow Molding Equipment
ALT823306	Monitor Process Operations
ALT823307	Finish Products and Components

A person who has achieved this Qualification is competent to be:

- ❑ **Plastic Machine Operator**

SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in PLASTIC MACHINE OPERATION NC II.

BASIC COMPETENCIES

UNIT OF COMPETENCY : PARTICIPATE IN WORKPLACE COMMUNICATION

UNIT CODE : 500311105

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from ***appropriate sources*** 1.2 Effective questioning , active listening and speaking skills are used to gather and convey information 1.3 Appropriate ***medium*** is used to transfer information and ideas 1.4 Appropriate non- verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and ***storage*** of information are used 1.7 Personal interaction is carried out clearly and concisely
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time 2.2 Own opinions are clearly expressed and those of others are listened to without interruption 2.3 Meeting inputs are consistent with the meeting purpose and established ***protocols*** 2.4 ***Workplace interactions*** are conducted in a courteous manner 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are tasked and responded to 2.6 Meetings outcomes are interpreted and implemented
3. Complete relevant work related documents	3.1 Range of ***forms*** relating to conditions of employment are completed accurately and legibly 3.2 Workplace data are recorded on standard workplace forms and documents 3.3 Basic mathematical processes are used for routine calculations 3.4 Errors in recording information on forms/ documents are identified and properly acted upon 3.5 Reporting requirements to supervisor are completed according to organizational guidelines

RANGE OF VARIABLES

VARIABLE	RANGE
1. Appropriate sources	1.1 Team members 1.2 Suppliers 1.3 Trade personnel 1.4 Local government 1.5 Industry bodies
2. Medium	2.1 Memorandum 2.2 Circular 2.3 Notice 2.4 Information discussion 2.5 Follow-up or verbal instructions 2.6 Face to face communication
3. Storage	3.1 Manual filing system 3.2 Computer-based filing system
4. Forms	4.1 Personnel forms, telephone message forms, safety reports
5. Workplace interactions	5.1 Face-to-face interactions 5.2 Telephone conversation 5.3 Electronic and two-way radio communication 5.4 Written communication including electronic mail, memos, instruction and forms 5.5 Non-verbal communication including gestures, signals, signs and diagrams
6. Protocols	6.1 Observing meeting 6.2 Compliance with meeting decisions 6.3 Obeying meeting instructions

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepared written communication following standard format of the organization 1.2 Accessed information using communication equipment 1.3 Made use of relevant terms as an aid to transfer information effectively 1.4 Conveyed information effectively adopting the formal or informal communication
2. Underpinning knowledge	2.1 Effective communication 2.2 Different modes of communication 2.3 Written communication 2.4 Organizational policies 2.5 Communication procedures and systems 2.6 Technology relevant to the enterprise and the individual's work responsibilities
3. Underpinning skills	3.1 Follow simple spoken language 3.2 Perform routine workplace duties following simple written notices 3.3 Participate in workplace meetings and discussions 3.4 Complete work related documents 3.5 Estimate, calculate and record routine workplace measures 3.6 Four fundamental operations (addition, subtraction, division and multiplication) 3.7 Ability to relate to people of social range in the workplace 3.8 Gather and provide information in response to workplace Requirements
4. Resource implications	The following resources **MUST** be provided: 4.1 Fax machine 4.2 Telephone 4.3 Writing materials 4.4 Internet
5. Method of assessment	Competency **MUST** be assessed through: 5.1 Direct observation 5.2 Oral interview and written test
6. Context of assessment	6.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **WORK IN TEAM ENVIRONMENT**

UNIT CODE : **500311106**

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Describe team's role and scope	1.1 The ***role and objective of the team*** is identified from available ***sources of information***
	1.2 Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources
2. Identify own role and responsibility within the team	2.1 Individual role and responsibilities within the team environment are identified
	2.2 Roles and responsibility of other team members are identified and recognized
	2.3 Reporting relationships within team and external to team are identified
3. Work as a team member	3.1 Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives
	3.2 Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and ***workplace context***
	3.3 Observed protocols in reporting using standard operating procedures
	3.4 Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Role and objective of team	1.1 Work activities in a team environment with enterprise or specific sector 1.2 Limited discretion, initiative and judgment maybe demonstrated on the job, either individually or in a team environment
2. Sources of information	2.1 Standard operating and/or other workplace procedures 2.2 Job procedures 2.3 Machine/equipment manufacturer's specifications and instructions 2.4 Organizational or external personnel 2.5 Client/supplier instructions 2.6 Quality standards 2.7 OHS and environmental standards
3. Workplace context	3.1 Work procedures and practices 3.2 Conditions of work environments 3.3 Legislation and industrial agreements 3.4 Standard work practice including the storage, safe handling and disposal of chemicals 3.5 Safety, environmental, housekeeping and quality guidelines

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Operated in a team to complete workplace activity 1.2 Worked effectively with others 1.3 Conveyed information in written or oral form 1.4 Selected and used appropriate workplace language 1.5 Followed designated work plan for the job 1.6 Reported outcomes
2. Underpinning knowledge	2.1 Communication process 2.2 Team structure 2.3 Team roles 2.4 Group planning and decision making
3. Underpinning skills	3.1 Communicate appropriately, consistent with the culture of the workplace
4. Resource implications	The following resources **MUST** be provided: 4.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or tasks
5. Method of assessment	Competency may be assessed through: 5.1 Observation of the individual member in relation to the work activities of the group 5.2 Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 5.3 Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
6. Context of assessment	6.1 Competency may be assessed in workplace or in a simulated workplace setting 6.2 Assessment shall be observed while task are being undertaken whether individually or in group

UNIT OF COMPETENCY : PRACTICE CAREER PROFESSIONALISM

UNIT CODE : 500311107

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes in promoting career growth and advancement.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Integrate personal objectives with organizational goals	1.1 Personal growth and work plans are pursued towards improving the qualifications set for the profession 1.2 Intra- and interpersonal relationships ~~is~~ are maintained in the course of managing oneself based on performance ***evaluation*** 1.3 Commitment to the organization and its goal is demonstrated in the performance of duties
2. Set and meet work priorities	2.1 Competing demands are prioritized to achieve personal, team and organizational goals and objectives. 2.2 ***Resources*** are utilized efficiently and effectively to manage work priorities and commitments 2.3 Practices along economic use and maintenance of equipment and facilities are followed as per established procedures
3. Maintain professional growth and development	3.1 ***Trainings and career opportunities*** are identified and availed of based on job requirements 3.2 ***Recognitions*** are sought/received and demonstrated as proof of career advancement 3.3 ***Licenses and/or certifications*** relevant to job and career are obtained and renewed

RANGE OF VARIABLES

VARIABLE	RANGE
1. Evaluation	1.1 Performance appraisal 1.2 Psychological profile 1.3 Aptitude tests
2. Resources	2.1 Human 2.2 Financial 2.3 Technology 2.3.1 Hardware 2.3.2 Software
3. Trainings and career opportunities	3.1 Participation in training programs 3.1.1 Technical 3.1.2 Supervisory 3.1.3 Managerial 3.1.4 Continuing education 3.2 Serving as resource persons in conferences and workshops
4. Recognitions	4.1 Recommendations 4.2 Citations 4.3 Certificate of appreciations 4.4 Commendations 4.5 Awards 4.6 Tangible and intangible rewards
5. Licenses and/or certifications	5.1 National certificates 5.2 Certificate of competency 5.3 Support level licenses 5.4 Professional licenses

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Attained job targets within key result areas (KRAs) 1.2 Maintained intra and interpersonal relationship in the course of managing oneself based on performance evaluation 1.3 Completed trainings and career opportunities which are based on the requirements of the industries 1.4 Acquired and maintained licenses and/or certifications according to the requirement of the qualification
2. Underpinning knowledge	2.1 Work values and ethics (Code of Conduct, Code of Ethics, etc.) 2.2 Company policies 2.3 Company-operations, procedures and standards 2.4 Fundamental rights at work including gender sensitivity 2.5 Personal hygiene practices
3. Underpinning skills	3.1 Appropriate practice of personal hygiene 3.2 Intra- and Interpersonal skills 3.3 Communication skills
4. Resource implications	The following resources **MUST** be provided: 4.1 Workplace or assessment location 4.2 Case studies/scenarios
5. Method of assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Simulation/Role-plays 5.4 Observation 5.5 Third Party Reports 5.6 Exams and Tests
6. Context of assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY : PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES

UNIT CODE : 500311108

UNIT DESCRIPTOR : This unit covers the outcomes required to comply with regulatory and organizational requirements for occupational health and safety.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Identify hazards and risks	1.1 ***Safety regulations*** and workplace safety and hazard control practices and procedures are clarified and explained based on organization procedures 1.2 ***Hazards/risks*** in the workplace and their corresponding indicators are identified to minimize or eliminate risk to co-workers, workplace and environment in accordance with organization procedures 1.3 ***Contingency measures*** during workplace accidents, fire and other emergencies are recognized and established in accordance with organization procedures
2. Evaluate hazards and risks	2.1 Terms of maximum tolerable limits which when exceeded will result in harm or damage are identified based on threshold limit values (TLV) 2.2 Effects of the hazards are determined 2.3 OHS issues and/or concerns and identified safety hazards are reported to designated personnel in accordance with workplace requirements and relevant workplace OHS legislation
3. Control hazards and risks	3.1 Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace are consistently followed 3.2 Procedures for dealing with workplace accidents, fire and emergencies are followed in accordance with organization OHS policies 3.3 ***Personal protective equipment (PPE)*** is correctly used in accordance with organization OHS procedures and practices 3.4 Appropriate assistance is provided in the event of a workplace emergency in accordance with established organization protocol
4. Maintain OHS awareness	4.1 ***Emergency-related drills and trainings*** are participated in as per established organization guidelines and procedures 4.2 ***OHS personal records*** are completed and updated in accordance with workplace requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Safety regulations	May include but are not limited to: 1.1 Clean air act 1.2 Building code 1.3 National electrical and fire safety codes 1.4 Waste management statutes and rules 1.5 Philippine occupational safety and health standards 1.6 DOLE regulations on safety legal requirements 1.7 ECC regulations
2. Hazards/Risks	May include but are not limited to: 2.1 Physical hazards – impact, illumination, pressure, noise, vibration, temperature, radiation 2.2 Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects 2.3 Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors 2.4 Ergonomics • Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, varying metabolic cycles • Physiological factors – monotony, personal relationship, work out cycle
3. Contingency measures	May include but are not limited to: 3.1 Evacuation 3.2 Isolation 3.3 Decontamination 3.4 (Calling designed) emergency personnel
4. PPE	May include but are not limited to: 4.1 Mask 4.2 Gloves 4.3 Goggles 4.4 Hair Net/cap/bonnet 4.5 Face mask/shield 4.6 Ear muffs 4.7 Apron/Gown/coverall/jump suit 4.8 Anti-static suits
5. Emergency-related drills and training	5.1 Fire drill 5.2 Earthquake drill 5.3 Basic life support/cardio pulmonary resuscitation (CPR) 5.4 First aid 5.5 Spillage control 5.6 Decontamination of chemical and toxic 5.7 Disaster preparedness/management
6. OHS personal records	6.1 Medical/health records 6.2 Incident reports 6.3 Accident reports 6.4 OHS-related training completed

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Explained clearly established workplace safety and hazard control practices and procedures 1.2 Identified hazards/risks in the workplace and its corresponding indicators in accordance with company procedures 1.3 Recognized contingency measures during workplace accidents, fire and other emergencies 1.4 Identified terms of maximum tolerable limits based on threshold limit value (TLV) 1.5 Followed Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace 1.6 Used Personal Protective Equipment (PPE) in accordance with company OHS procedures and practices 1.7 Completed and updated OHS personal records in accordance with workplace requirements
2. Underpinning knowledge	2.1 OHS procedures and practices and regulations 2.2 PPE types and uses 2.3 Personal hygiene practices 2.4 Hazards/risks identification and control 2.5 Threshold limit value (TLV) 2.6 OHS indicators 2.7 Organization safety and health protocol 2.8 Safety consciousness 2.9 Health consciousness
3. Underpinning skills	3.1 Practice of personal hygiene 3.2 Hazards/risks identification and control skills 3.3 Interpersonal skills 3.4 Communication skills
4. Resource implications	The following resources **MUST** be provided: 4.1 Workplace or assessment location 4.2 OHS personal records 4.3 PPE 4.4 Health records
5. Method of assessment	Competency **MUST** be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Case Study/Situation
6. Context of assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

COMMON COMPETENCIES
(AUTOMOTIVE MANUFACTURING-PARTS MANUFACTURING)

UNIT TITLE: **READ, INTERPRET AND APPLY ENGINEERING DRAWINGS**.

UNIT CODE: ALT742201

UNIT DESCRIPTOR: This unit deals with identifying, interpreting and applying specification from engineering blue prints or drawings that provides the measurements of the product and pattern that is to be produced.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify and access engineering drawings/ specification	1.1 Appropriate ***engineering drawings*** are identified and accessed as per job requirements. 1.2 Version and date of drawing is checked to ensure correct specification and procedure are identified.
2. Interpret drawings	2.1 Relevant dimensions and sections of the drawings/ specifications are located in relation to the work to be conducted 2.2 Information in the manual are interpreted in accordance to industry practices
3 Apply information in the drawings & specifications	3.1 Engineering drawing is interpreted according to job requirements 3.2 Work steps are correctly identified in accordance with the specifications in the drawings. 3.3 Dimensional ***data*** and shape are applied according to the given task
4. Store drawings	4.1 The drawings and specification are stored properly to ensure prevention of damage, ready access and updating of information when required in accordance with company requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Engineering drawings	Kinds of drawings: 1.1 Casting drawing 1.2 Machining drawing 1.3 Project plan 1.4 Technical drawing
2. Data	Data includes but not limited to 2.1 Material specifications 2.2 Process specifications 2.3 Special instructions 2.4 Machining locating points 2.5 Clamping points 2.6 Amount of draft 2.7 Surface finish

EVIDENCE GUIDE

1.Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified and accessed drawings/specification 1.2 Interpreted drawings 1.3 Applied information in drawings 1.4 Stored drawings
2. Underpinning knowledge and attitudes	2.1 Types of drawings used in automotive manufacturing industry 2.2 Identification of symbols used in the drawings 2.3 Identification of units of measurements 2.4 Unit conversion 2.5 Attention to details, Perseverance, Honesty
3. Underpinning skills	3.1 Reading and comprehension skills required to identify and interpret engineering drawings and specifications 3.2 Accessing information and data
4. Resource implications	The following resources **MUST** be provided: 4.1 All drawings/engineering specifications relative to automotive manufacturing 4.2 Job order, requisitions 4.3 Product sample
5 Method of assessment	Competency **MUST** be assessed through: 5.1 Observation with questioning 5.2 Interview
6 Context of assessment	6.1 Assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 6.2 Assessment may be conducted in the workplace or a simulated environment.

UNIT OF COMPETENCY: PERFORM MENSURATION AND CALCULATION

UNIT CODE: ALT311202

UNIT DESCRIPTOR: This unit includes identifying, caring for, handling, using and maintaining measuring instruments.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Select measuring instruments	1.1 Object or component to be measured is identified 1.2 Correct specifications are obtained from relevant source 1.3 Appropriate ***measuring instrument*** is selected according to job requirements
2. Carry out measurements and calculation	2.1 Measuring tools are selected in line with job requirements 2.2 Accurate measurements are obtained to job 2.3 ***Calculation*** needed to complete work tasks are performed using the four basic process of addition (+), subtraction (-), multiplication (x) and division (/). 2.4 Calculations involving fractions, percentages and mixed numbers are used to complete workplace tasks. 2.5 Numerical computation is self-checked and corrected for accuracy 2.6 Instruments are read to the limit of accuracy of the tool.
3. Maintain measuring instruments	3.1 Measuring instruments are kept free from corrosion 3.2 Measuring instruments are not dropped to avoid damage 3.3 Measuring instruments are cleaned before and after using.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Measuring instruments	Measuring instruments includes: 1.1 Multitester 1.2 Micrometer (In-out, depth) 1.3 Vernier caliper (Out, inside) 1.4 Dial Gauge with Mag. Std. 1.5 Straight Edge Thickness gauge 1.6 Try square 1.7 Protractor 1.8 Height gauge 1.9 Steel rule Shrink rule
2. Calculation	Kinds of part mensuration include: 2.1 Volume 2.2 Area 2.3 Displacement 2.4 Inside diameter 2.5 Circumference 2.6 Length 2.7 Thickness 2.8 Outside diameter 2.9 Taper 2. 10 Out of roundness 2.11 Shrinkage allowance

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate: 1.1 Selected measuring instruments 1.2 Carried-out measurements and calculations. 1.3 Maintained measuring instruments
2. Underpinning knowledge and attitudes	2.1 Types of Measuring instruments and its uses 2.2 Safe handling procedures in using measuring instruments 2.3 Four fundamental operation of mathematics 2.4 Formula for Volume, Area, Perimeter and other geometric figures
3. Underpinning skills	3.1 Caring and Handling measuring instruments 3.2 Calibrating and using measuring instruments 3.3 Performing calculation by Addition, Subtraction, Multiplication and Division 3.4 Visualizing objects and shapes 3.5 Interpreting formula for volume, area, perimeter and other geometric figures
4. Resource implications	The following resources **MUST** be provided: 4.1 Workplace location 4.2 Measuring instrument appropriate to servicing processes 4.3 Instructional materials relevant to the propose activity
5. Method of assessment	Competency **MUST** be assessed through: 5.1 Observation with questioning 5.2 Written or oral examination 5.3 Interview 5.4 Demonstration with questioning
6. Context of assessment	6.1 Competency elements must be assessed in a safe working environment 6.2 Assessment may be conducted in a workplace or simulated environment

UNIT TITLE: **READ, INTERPRET AND APPLY SPECIFICATION AND MANUALS**.

UNIT CODE: ALT723203

UNIT DESCRIPTOR: This unit deals with identifying, interpreting and applying service specification manuals, maintenance procedure manuals and periodic maintenance manual.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify and access manual/ specification	1.1 Appropriate ***manuals*** are identified and accessed as per job requirements. 1.2 Version and date of manual is checked to ensure correct specification and procedure are identified.
2. Interpret manuals	2.1 Relevant sections, chapters of manuals/specifications are located in relations to the work to be conducted 2.2 Information and procedure in the manual are interpreted in accordance to industry practices
3 Apply information in manual	3.1 Manual is interpreted according to job requirements 3.2 Work steps are correctly identified in accordance with manufacturer specification 3.3 Manual data is applied according to the given task 3.4 All correct sequencing and adjustments are interpreted in accordance with information contained on the manual or specifications
4. Store manuals	4.1 Manual or specification are stored appropriately to ensure prevention of damage, ready access and updating of information when required in accordance with company requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Manuals	Kinds of manuals: 1.1 Manufacturer's specification manual 1.2 Repair manual 1.3 Maintenance Procedure Manual 1.4 Periodic Maintenance Manual

EVIDENCE GUIDE

1.Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified and accessed manual/specification 1.2 Interpreted manuals 1.3 Applied information in manuals 1.4 Stored manuals
2. Underpinning knowledge and attitudes	2.1 Types of manuals used in automotive industry 2.2 Identification of symbols used in the manuals 2.3 Identification of units of measurements 2.4 Unit conversion
3. Underpinning skills	3.1.Reading and comprehension skills required to identify and interpret automotive manuals and specifications 3.2. Accessing information and data
4 Resource Implications	The following resources must be provided: 4.1 All manuals/catalogues relative to Automotive 4.2 Job order, requisitions 4.3 Actual vehicle or simulator
5 Method of assessment	Competency must be assessed through: 5.1 Observation with questioning 5.2 Interview
6 Context of assessment	6.1 Assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 6.2 Assessment may be conducted in the workplace or a simulated environment.

UNIT OF COMPETENCY : PERFORM SHOP MAINTENANCE

UNIT CODE : ALT723205

UNIT DESCRIPTOR : This unit deals with inspecting and cleaning of work area including tools, equipment and facilities. Storage and checking of tools/ equipment and disposal of used supplies/materials are also incorporated in this competency.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Inspect/clean tools and work area	1.1 Cleaning solvent used as per workshop/tools ***cleaning requirement***
	1.2 **W*ork area*** is checked and cleaned
	1.3 Wet surface/spot in work area is wiped and dried
2. Store/arrange tools and shop equipment	2.1 Tools/equipment are checked and stored in their respective shelves/location
	2.2 Corresponding labels are posted and visible
	2.3 Tools are safely secured and logged in the records
3. Dispose wastes/used lubricants	3.1 Containers for used lubricants are visibly labeled
	3.2 Wastes/used lubricants are disposed as per workshop SOP
4. Report damaged tools/equipment	4.1 Complete inventory of tools/equipment is maintained
	4.2 Damaged tools/equipment/facilities are identified and repair recommendation is given
	4.3 Reports prepared has no error/discrepancy

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work area	Work areas include: 1.1 Workshop areas for servicing/repairing light and/or heavy vehicle and/or plant transmissions and/or outdoor power equipment 1.2 Open workshop/garage and enclosed, ventilated office area 1.3 Other variables may include workshop with: • Mess hall • Wash room • Comfort room
2. Cleaning requirement	2.1 Cleaning solvent 2.2 Inventory of supplies, tools, equipment, facilities 2.3 List of mechanics/technicians 2.4 Rags 2.5 Broom 2.6 Mop 2.7 Pail 2.8 Used oil container 2.9 Oiler 2.10 Dust/waste bin
3. Manuals	3.1 Vehicle/plant manufacturer specifications 3.2 Company operating procedures 3.3 Industry/Workplace Codes of Practice 3.4 Product manufacturer specifications 3.5 Customer requirements 3.6 Industry Occupational Health and Safety
4. Company standard operating procedure	Wearing of Personal protective equipment include: 4.1 Gloves 4.2 Apron 4.3 Goggles 4.4 Safety shoes

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Cleaned workshop tools/facilities 1.2 Maintained equipment, tools and facilities 1.3 Disposed wastes and used lubricants/fluid as per required procedure
2. Underpinning knowledge and attitudes	2.1 5 S or TQM 2.2 Service procedures 2.3 Relevant technical information 2.4 Safe handling of equipment and tools 2.5 Vehicle safety requirements 2.6 Workshop policies 2.7 Personal safety procedures 2.8 Fire extinguishers and prevention 2.9 Storage/disposal of hazardous/flammable materials 2.10 Positive Work Values (Perseverance, Honesty, Patience, Attention to Details)
3. Underpinning skills	3.1 Handling/Storing of tools/equipment/supplies and material 3.2 Cleaning grease/lubricants 3.3 Disposing of wastes and fluid 3.4 Preparing inventory of s/m and tools and equipment 3.5 Monitoring of s/m and tools/equipment
4. Resource implications	The following resources **MUST** be provided: 4.1 Workplace: Real or simulated work area 4.2 Appropriate Tools & equipment 4.3 Materials relevant to the activity
5. Method of assessment	Competency **MUST** be assessed through: 5.1 Written/Oral Questioning 5.2 Demonstration
6. Context of assessment	6.1 Competency must be assessed on the job or in a simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.

CORE COMPETENCIES

UNIT OF COMPETENCY: PREPARE MOLDS FOR COMPOSITES PRODUCTION

UNIT CODE : ALT823301

UNIT DESCRIPTOR : This competency covers the demolding and preparation of composites molds (single and multi-cavity molds) for the application by hand or machine of gel coating, or other first coat, in preparation for composites production. It also covers the inspection and temporary repair of minor mold surface defects.

This competency is typically performed by operators working either independently or as part of a work team.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1 Prepare surfaces	1.1 Surfaces are prepared according to ***industry standard procedures*** 1.2 Temporary repairs are made as needed 1.3 ***Tools and equipment*** and work area are cleaned up when surface preparation is completed
2 Apply mold release system	2.1 ***Mold release system*** is selected for the job 2.2 ***Mold*** release system is applied to mold surfaces as per manufacturer's specifications 2.3 Surface release system undergone tape-test according to workplace standard operating procedure.
3 Mask-up mold	3.1 Suitable masking tape is selected 3.2 Masking tape and other materials is applied to mold according to standard operating procedures.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Industry Standard Procedures	Procedure means all relevant: 1.1. Workplace procedures 1.2. Work instruction 1.3. Temporary instructions 1.4. Industry and government codes and standards
2. Tools and equipment	2.1. Hand finishing tools 2.2. Plastic scrapers 2.3. Buffs and polishes 2.4. PPE like gloves, respirator mask, face shield, safety shoes
3. Mold release system	3.1. Operation of all relevant additional equipment that is integral to the surface preparation process 3.2. Demolding of a previous product or protective surface to procedures
4. Mold	Mold in terms of product size such as below but excluding dash panel boards and the likes: 4.1. Light housing 4.2. Console box 4.3. Washer tank 4.4. Bottle

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Prepared surfaces 1.2. Identified repairs and appropriate action is taken. 1.3. Applied mold release system 1.4. Masked-up mold 1.5. Followed all safety procedures
2. Underpinning knowledge and attitudes	2.1. Understand effects of contamination on surface quality 2.2. Kinds of equipment, tools and consumables required to deliver the specified mold surface 2.3. Different types of mold release systems 2.4. Different application techniques for the mold release systems used 2.5. Typical problems with each mold release system 2.6. Faults caused by materials, contaminants and equipment 2.7. Safety and emergency procedures in the workplace
3. Underpinning skills	3.1. Monitor equipment operation and surface quality 3.2. Plan own work including predicting consequences and identifying improvements 3.3. Use PPE, safely handle products and materials, read relevant safety information and apply safety precautions appropriate to the task. 3.4. Perform routine workplace duties following simple written notices 3.5. Select and use correctly equipment, materials, processes and procedures 3.6. Participate in workplace meetings and discussions 3.7. Complete work related documents 3.8. Compute basic mathematical processes of addition, subtraction, division and multiplication 3.9. Gather and provide information in response to workplace requirements
4. Resource implications	The following resources **MUST** be provided: 4.1. Access to a range of mold release system and equipment. 4.2. Tools, equipment and workplace relevant with the requirements for the job. 4.3. Supplies and consumable materials 4.4. Engineering manuals
5. Method of assessment	Competency **MUST** be assessed through: 5.1. Direct Observation with questioning 5.2. Written assessment 5.3. Portfolio
6. Context of assessment	6.1. Competency may be assessed individually in the actual workplace or a simulated workplace environment. 6.2. Practical skills must take place only after a period of supervised practice and repetitive experience. 6.3. Prescribe outcome must be able to achieve without direct supervision.

UNIT OF COMPETENCY: PREPARE MATERIALS TO FORMULAE

UNIT CODE : ALT823302

UNIT DESCRIPTOR : This competency covers preparing materials to formulate for production or product finishing.

This competency is typically performed by operators working either independently or as a part of a work team.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify requirements to handle materials	1.1 Specifications are read and interpreted and materials are identified 1.2 Units of measurement and matching measuring ***equipment and tools*** are identified 1.3 Tolerances of measuring equipment is determined the and related them to the impact of over/under measurement of ingredients on production process and quality 1.4 Procedures are followed to prevent/control the identified ***hazards*** 1.5 Workplace ***procedures*** is read, understood and used to plan work sequence.
2. Prepare for assembly of ingredients	2.1 Appropriate measurement scales are identified 2.2 Equipment for measurement is calibrated to zero 2.3 Required personal protection equipment is worn according to company standard operating procedure 2.4 Equipment for assembly undergone pre-start checking and ensured safe guards for emergencies situations are in place. 2.5 Work area is checked for cleanliness 2.6 Sources of ***potential contamination*** are identified and steps to minimize/eliminate contamination risk are taken
3. Assemble ingredients	3.1 Ingredients are collected, weighed/measured according to procedure and formula sheet 3.2 Correctness of color is checked if conforms to standard 3.3 Action is taken in procedures if materials/assembled ingredients do not appear to meet requirements 3.4 Standard operating procedures and appropriate safety measures is followed and observed when conducting work 3.5 Appropriate workplace-approved sequence is follow for combination of materials 3.6 Workplace records is complete according to company standard operating procedures 3.7 Unused ingredients are cleaned and stored,

RANGE OF VARIABLES

VARIABLE	RANGE
1. Equipment and tools	1.1. Measuring equipment 1.2. Knives and other bag opening equipment 1.3. Hoists/lifting equipment 1.4. Hand tools
2. Hazards	Typical hazards include: 2.1. Spills 2.2. Dusts/vapors 2.3. Hazardous materials 2.4. Manual handling hazards 2.5. Knife hazards
3. Procedures	3.1. Workplace procedures 3.2. Work instructions 3.3. Instructions and relevant industry and government codes and standards
4. Personal protective equipment	4.1. Respiratory mask 4.2. Face shield 4.3. Safety shoes 4.4. Apron
5. Potential contaminants	5.1. Oil/grease 5.2. Dust 5.3. Dirt 5.4. Metal burrs

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Used measuring scales equipment and tools. 1.2. Identified, used, interpreted and applied relevant formulae and information 1.3. Maintained workplace records for materials used and mixes produced 1.4. Identified and safely handled products and materials applying safety precautions appropriate to the task including safe storage of materials 1.5. Took precautionary measures in handling material with critical properties and quantities
2. Underpinning knowledge and attitudes	2.1. Understand potential situations requiring action result in implementing appropriate action manuals 2.2. Particular application or use of material handling equipment 2.3. Company policies and procedures 2.4. Company OH&S procedures 2.5. Maintenance and calibration of measuring equipment
3. Underpinning skills	3.1. Ability to read and interpret typical product specifications, job sheets and material labels as provided to operators 3.2. Proper use of measuring equipment 3.3. Participate in workplace meetings and discussions 3.4. Complete work related documents 3.5. Basic mathematical processes of addition, subtraction, division and multiplication 3.6. Gather and provide information in response to workplace requirements
4. Resource implications	The following resources **MUST** be provided: 4.1. Suitable access to an operating plant or equipment that allows for appropriate and realistic simulation 4.2. A bank of case studies/scenarios 4.3. Supplies and consumable materials 4.4. Engineering manuals
5. Method of assessment	Competency **MUST** be assessed through: 5.1. Direct Observation with questioning 5.2. Oral interview and written test 5.3. Portfolio assessment
6. Context of assessment	6.1. Competency may be assessed individually in the actual workplace or a simulated workplace environment. 6.2. Practical skills must take place only after a period of supervised practice and repetitive experience. 6.3. Prescribe outcome must be able to achieve without direct supervision.

UNIT OF COMPETENCY: ASSEMBLE MATERIALS AND EQUIPMENT FOR PRODUCTION

UNIT CODE : ALT823303

UNIT DESCRIPTOR : This competency covers the interpretation of product specifications, selection of required materials and equipment, organizing delivery and confirmation of material/equipment delivery to the production area in preparation for production.

This competency is typically performed by operators working either independently or as a part of a work team

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify required materials and equipment	1.1 Product specifications is interpreted according to job requirement and work instruction 1.2 Required materials including additives are identified based on the given specifications 1.3 Trade names for required product is identified according to job order 1.4 Quantity of materials required for product is determined without error 1.5 Required equipment including handling, control and material preparation ***equipment and tools*** are identified based on the given work instruction
2. Select materials and equipment	2.1 Required materials, equipment and machinery are located and made available 2.2 Items are marked-off on checklist as required and without error 2.3 Holding area is identified and prepared according to work requirements.
3. Assemble materials and equipment	3.1 Good manual handling practices are used in accordance with company standard operating procedures 3.2 Required procedures, particularly OHS procedures, codes and practices is followed and observed per identified ***hazards***. 3.3 Materials are collected and organized in a manner that ensures storage compatibility 3.4 Materials are checked visually according to enterprise requirements 3.5 Holding sample are collected according to enterprise requirements 3.6 Details of specification and sample are recorded as required
4. Organize internal workplace delivery of materials/ equipment	4.1 Placement of material are organize to required locations using enterprise ***procedures*** 4.2 Delivery is notified and confirmed as per enterprise requirements/procedures 4.3 Workplace procedures is followed as required by enterprise
5. Store materials for production	5.1 Storage requirements is identified according to job requirement 5.2 Holding area conditions is checked to meet material requirements 5.3 Materials are stored as required for production and to meet health and safety needs 5.4 Required workplace documentation/records are completed

RANGE OF VARIABLES

VARIABLE	RANGE
1. Equipment and tools	1.1. Hand carts and trolleys 1.2. Bung spanners and similar 1.3. Knives and other bag opening equipment 1.4. Hoists/lifting equipment 1.5. Hand tools
2. Hazards	Typical hazards include: 2.1. Spills 2.2. Dusts/vapors 2.3. Hazardous materials 2.4. Manual handling hazards 2.5. Knife hazards
3. Procedures	3.1. Workplace procedures 3.2. Work instructions 3.3. Instructions and relevant industry and government codes and standards

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Identified required materials and equipment 1.2. Selected materials and equipment 1.3. Assembled materials and equipment 1.4. Organized internal workplace delivery of materials/ equipment 1.5. Stored materials for production
2. Underpinning knowledge and attitudes	2.1. Formulas of common plastics 2.2. Knowledge and application of polymer materials 2.3. Production workflow sequences and materials demand 2.4. Different trade names of common plastic materials 2.5. Kinds of end use examples of plastics by type and common family names 2.6. Materials safety data sheets 2.7. Safety and emergency procedures in handling and storing products 2.8. Positive work values, honesty in the workplace
3. Underpinning skills	3.1. Ability to read and interpret typical product specifications, job sheets and material labels as provided to operators 3.2. Proper use of measuring equipment 3.3. Participate in workplace meetings and discussions 3.4. Complete work related documents 3.5. Computing basic mathematical processes of addition, subtraction, division and multiplication 3.6. Gather and provide information in response to workplace Requirements
4. Resource implications	The following resources **MUST** be provided: 4.1. Suitable access to an operating plant or equipment that allows for appropriate and realistic simulation 4.2. A bank of case studies/scenarios 4.3. Supplies and consumable materials 4.4. Engineering manuals
5. Method of assessment	Competency **MUST** be assessed through: 5.1. Direct Observation with questioning 5.2. Oral interview and written test 5.3. Portfolio assessment
6. Context of assessment	6.1. Competency may be assessed individually in the actual workplace or a simulated workplace environment. 6.2. Practical skills must take place only after a period of supervised practice and repetitive experience. 6.3. Prescribe outcome must be able to achieve without direct supervision.

UNIT OF COMPETENCY: OPERATE INJECTION MOLDING EQUIPMENT

UNIT CODE : ALT823304

UNIT DESCRIPTOR : This competency covers the operation of injecting molding equipment and the resolving routine problems to produce plastic products.

This competency is typically performed by operators working either independently or as a part of a work team

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Check work requirements	1.1 Work requirements are identified based on ***procedures*** 1.2 Product, materials and ***equipment*** requirements are identified based on the job requirements. 1.3 ***Hazards*** are recognize and precautionary steps are adopted to ensure safety 1.4 Requirements are checked with supervisor/appropriate person if found not in accordance with normal practice
2. Conduct pre-start checks as required	2.1. Safety gates and guards are checked if in position and in working condition 2.2. Raw materials are checked for correctness based on product specifications. 2.3. Other pre-start checks are undertaken in accordance with procedures
3. Operate equipment	3.1. Machine is started safely and correctly when required based on equipment operating instruction 3.2. Process is check if within the required limits based on product specifications 3.3. ***Mold*** products are collected and stored as required 3.4. Product/process are checked if within specification/ as to required quality standard 3.5. Supply of materials is maintain as required 3.6. Logs and records are completed when required 3.7. Collection and reprocessing/discarding scrapping/trimming of materials are undertaken in accordance with procedures 3.8. Equipment and work area are cleaned up in accordance with company procedures 3.9. Equipment is stopped/paused in an emergency, following workplace and emergency procedures
4. Resolve routine problems	4.1. ***Routine problems/ faults*** likely to occur are identified during the operation and appropriate precautionary measures are readied according to company standard operating procedures. 4.2. Appropriate records and log books of equipment operations are ensure and maintained according to company procedures 4.3. Non-routine problems are identified and reported to designated person

RANGE OF VARIABLES

VARIABLE	RANGE
1. Procedures	1.1. Workplace procedures 1.2. Work instructions 1.3. Temporary instructions 1.4. Industry and government codes and standards
2. Equipment and tools	Equipment and tools may include and but not limited to: 2.1. Electrical, pneumatic, mechanical Electromechanical and hydraulic injection molding machines and components such as base, frame, feed hoppers and material supply mechanisms 2.2. Die/tool 2.3. Injection units 2.4. Chillers/cooling towers 2.5. Die heating equipment 2.6. Hopper driers, mixing hoppers, dehumidifying driers 2.7. Air compressors 2.8. Dosing and Brushing machines 2.9. Color blending equipment and conveyors 2.10. Barrel and screw plastification unit 2.11. Material loading equipment used for loading of raw materials 2.12. Hand tools used in the injection molding process 2.13. Personal protective equipment
3. Hazards	Typical hazards include: 3.1. Spills 3.2. Dusts vapors 3.3. Slip and fall, particularly due to split granules 3.4. Temperature 3.5. Hazardous substances 3.6. Moving equipment 3.7. Manual handling hazards
4. Mold	Mold in terms of product size such as below but excluding dash panel boards and the likes: 4.1 Light housing 4.2 Console box 4.3 Washer tank 4.4 Bottle
5. Routine problems/faults	Typical routine process problems include: 5.1. Equipment malfunction 5.2. Variations in temperature, pressure, speed, injection dwell and clamp times 5.3. Variations in materials or contamination of materials 5.4. Die damage Typical routine product problems include: 5.5. Routine injection molding faults 5.6. Machine malfunction 5.7. Die/tooling problem 5.8. Splits, scorch, lack of bond 5.9. Variations in material and/or contamination of materials

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Checked work requirements 1.2. Conducted pre-start checks as required 1.3. Operated equipment 1.4. Resolved routine problems 1.5. Took appropriate action to resolve faults or report faults to appropriate personnel 1.6. Explained and implemented emergency shutdown procedures 1.7. Ensured Injection molding production standards are met consistently 1.8. Ensured upstream and downstream communication is timely and effective 1.9. Read and interpreted correctly the operating procedures and work instructions 1.10. Identified problems and appropriate action is taken 1.11. Followed all safety procedures
2. Underpinning knowledge and attitudes	2.1. Operation of injection molding equipment and components 2.2. Production workflow sequences and materials demand 2.3. Different reasons for checking process control panels and reporting readings which do not conform to the work instructions 2.4. Potential effects of variations in raw materials and equipment operation in relation to quality of product 2.5. Waste management and importance of reusing non-conforming products wherever possible 2.6. Correct selection and use of equipment, materials, processes and procedures 2.7. Factors which may affect product quality or production output and appropriate 2.8. Possible causes of routine injection moulding faults 2.9. Approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup
3. Underpinning skills	3.1. Plan own work including predicting consequences and identifying improvements 3.2. Monitor equipment operation and product quality 3.3. Handle safely products and materials, read relevant safety information and apply safety precautions appropriate to the task 3.4. Pause equipment, or shut down equipment in abnormal circumstances 3.5. Participate in workplace meetings and discussions 3.6. Complete work related documents 3.7. Basic mathematical processes of addition, subtraction, division and multiplication 3.8. Gather and provide information in response to workplace Requirements

4. Resource implications	The following resources **MUST** be provided: 4.1. A bank of scenarios and questions 4.2. Tools, equipment and workplace relevant with the requirements for the job. 4.3. Supplies and consumable materials 4.4. Engineering manuals
5. Method of assessment	Competency **MUST** be assessed through: 5.1. Direct Observation with questioning 5.2. Oral interview and written test 5.3. Portfolio assessment
6. Context of assessment	6.1. Competency may be assessed individually in the actual workplace or a simulated workplace environment. 6.2. Practical skills must take place only after a period of supervised practice and repetitive experience. 6.3. Prescribe outcome must be able to achieve without direct supervision.

UNIT OF COMPETENCY: OPERATE BLOW MOLDING EQUIPMENT

UNIT CODE : ALT823305

UNIT DESCRIPTOR : This competency covers the operation of blow molding equipment and the resolving of routine problems to procedure. This competency is typically performed by operators working either independently or as part of a work team.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Check work requirements	1.1 Work requirements is identified based on ***procedures*** 1.2 Product, materials and ***tools*** and ***equipment*** are identified based on job requirements 1.3 ***Hazards*** are recognized and steps required to ensure safety are adopted and considered. 1.4 Requirements are checked with supervisor/appropriate person if found not in accordance with normal practice
2. Conduct pre-start checks as required	2.1 Safety gates and guards are checked if in position and in working condition 2.2 Raw materials are check based on listed specification 2.3 Other pre-start checks are undertaken in accordance with procedures
3. Operate equipment	3.1 Condition of equipment is checked and raw materials are introduced as required by procedures 3.2 Product/process is checked if within required limits based on work instruction 3.3 ***Mold*** products are collected and stored as required 3.4 Product/process is checked if within specification/ as to required quality standard 3.5 Supply of materials is maintain as required 3.6 Logs and records are completed as required and in accordance with company standard operating procedure 3.7 Materials are collected, reprocessed/discarded, scraped/trimmed in accordance with procedures 3.8 Equipment and work area is clean up in accordance with procedures 3.9 Equipment operation is stopped/paused in an emergency, following workplace and emergency procedures
4. Resolve routine problems	4.1 Faults that likely to occur are identified during the operation 4.2 Causes of ***routine problems/faults*** are identify and actions are taken on in accordance with procedures 4.3 Appropriate records and log books of equipment operations are maintained to meet procedures 4.4 Non-routine problems and report are identified including persons designated to respond to problems.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Procedures	1.1. Workplace procedures 1.2. Work instructions 1.3. Temporary instructions 1.4. Industry and government codes and standards
2. Equipment and tools	Equipment and tools may include and but not limited to: 2.1. Bottom blow, top blow, needle blow, tail to tail blow, parison pre-blow and pre-squeeze, parison stretching and parison orientation type machines 2.2. Die/tool 2.3. Chillers/cooling towers 2.4. Die heating equipment 2.5. Hopper driers, mixing hoppers, dehumidifying driers 2.6. Air compressors 2.7. Dosing machines 2.8. Color blending equipment and conveyors 2.9. Material loading equipment used for loading of raw materials 2.10. Hand tools used in the blow moulding process 2.11. Personal protective equipment
3. Hazards	Typical hazards include: 3.1. Spills 3.2. Dusts vapors 3.3. Slip and fall, particularly due to split granules 3.4. Temperature 3.5. Hazardous substances 3.6. Moving equipment 3.7. Manual handling hazards
4. Mold	Mold in terms of product size such as below but excluding dash panel boards and the likes: 4.1 Light housing 4.2 Console box 4.3 Washer tank 4.4 Bottle
5. Routine problems	Typical routine process problems include: 5.1. Equipment malfunction 5.2. Variations in temperature, pressure, speed, inflation 5.3. Variations in materials or contamination of materials 5.4. Die damage Typical routine product problems include: 5.5. Machine malfunction 5.6. Variations in materials and/or contamination of materials 5.7. Die/tooling problems 5.8. Wall thinning, holes 5.9. Poor surface finish, warping 5.10. Poor color dispersion 5.11. Ejection damage 5.12. Color contamination 5.13. Black spots

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.12. Checked work requirements and recognized importance of material properties and qualities 1.13. Applied approved procedures 1.14. Took appropriate action to resolve faults or report faults to appropriate personnel 1.15. Explained and implemented emergency shutdown procedures 1.16. Ensured blow molding production standards are met consistently 1.17. Ensured upstream and downstream communication is timely and effective 1.18. Read and interpreted correctly the operating procedures and work instructions 1.19. Identified problems and appropriate action is taken 1.20. Followed all safety procedures
2. Underpinning knowledge and attitudes	2.1. Procedure in operation of blow molding equipment and components 2.2. Production workflow sequences and materials demand 2.3. Reasons for checking process control panels and reporting readings which do not conform to the work instructions 2.4. Approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup 2.5. Potential effects of variations in raw materials and equipment operation in relation to quality of product 2.6. Waste management and importance of reusing non-conforming products wherever possible 2.7. Correct selection and use of equipment, materials, processes and procedures 2.8. Different factors which may affect product quality or production output and appropriate 2.9. Possible causes of routine blow molding faults 2.10. Honesty in the workplace, perseverance and safety awareness
3. Underpinning skills	3.1. Plan own work including predicting consequences and identifying improvements 3.2. Monitor equipment operation and product quality 3.3. Handle safely products and materials, read relevant safety information and apply safety precautions appropriate to the task 3.4. Pause equipment, or shut down equipment in abnormal circumstances 3.5. Participate in workplace meetings and discussions 3.6. Complete work related documents 3.7. Basic mathematical processes of addition, subtraction, division and multiplication 3.8. Gather and provide information in response to workplace Requirements
4. Resource implications	The following resources **MUST** be provided: 4.1. A bank of scenarios and questions 4.2. Tools, equipment and workplace relevant with the requirements for the job. 4.3. Supplies and consumable materials 4.4. Engineering manuals

5. Method of assessment	Competency **MUST** be assessed through: 5.1. Direct Observation with questioning 5.2. Written examination 5.3. Portfolio
6. Context of assessment	6.1. Competency may be assessed individually in the actual workplace or a simulated workplace environment. 6.2. Practical skills must take place only after a period of supervised practice and repetitive experience. 6.3. Prescribe outcome must be able to achieve without direct supervision.

UNIT OF COMPETENCY: MONITOR PROCESS OPERATIONS

UNIT CODE : ALT823306

UNIT DESCRIPTOR : This competency covers the use of production processing equipment. This competency is typically performed by all operators working either independently or as part of a work team.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify equipment control and procedures	1.1 Work requirements are identified from workplace operating ***procedures.*** 1.2 Operating procedures and controls are checked and approved adjustments are made based on company operating parameters 1.3 Actions to be used in the event of faulty production is established according to company operating procedures 1.4 Procedures for obtaining materials for the process is identified and approved according to company standard operating procedure 1.5 Hazards and environmental issue that might surround the operation are identified and dealt with according to company standard operating procedure on safety and emergency, provision on Philippine Clean Air Act and other existing environmental legislations
2. Prepare for work/job	2.1 Ancillary ***tools and equipment*** are assembled based on equipment operating instruction 2.2 Inspection procedures are identified 2.3 Finishing activities are identify 2.4 Any hazards connected with materials and process are identified and appropriate safety procedures are readied in accordance with equipment operating instruction, workplace reference materials including materials safety data sheets and equipment instructions 2.5 Risks from the identified ***hazards*** are considered and appropriate measures are taken to minimize them. 2.6 Location and function of equipment emergency stops and ensure guards are establish the and appropriate inspection are undertaken to ensure that they are in place 2.7 Requirements are identified and noted or checking: 2.7.1. materials inputs and outputs 2.7.2. ancillary supplies and equipment 2.7.3. product quality requirements for the relevant process stage(s) 2.8 Access to any required supplementary equipment for product quality testing or routine lubrication and adjustment are obtained or arranged according to company standard operating procedure

3. Maintain operations	3.1 Process operations is checked, including noting product quality, production outputs and waste, in accordance with workplace practices 3.2 Product outputs are collected, checked for conformity/stored, and necessary adjustments to the equipment are made (where appropriate) 3.3 Material which is able to be reprocessed and reused are collected, and procedure for waste and scrap management is undertaken in accordance with workplace procedures (where applicable) 3.4 Check readouts against standard statistical process information and enter production data into the control system 3.5 Clean up equipment and work area and manage waste in accordance with workplace procedures
4. Identify product quality requirements	4.1 Monitor process and note conditions which may affect product quality standards 4.2 Report process variations within workplace procedures 4.3 Note and implement authorized changes in standard operating procedures and specifications

RANGE OF VARIABLES

VARIABLE	RANGE
1. Procedures	1.1. Workplace procedures 1.2. Work instructions 1.3. Temporary instructions 1.4. Industry and government codes and standards
2. Equipment and tools	Equipment and tools may include and but not limited to: 2.1. Hand carts and trolleys 2.2. Knives and other bag opening equipment 2.3. Hoists/lifting equipment 2.4. Basic hand tools required for opening of material packaging 2.5. Personal protective equipment
3. Hazards	Typical hazards include: 3.1. Automated or rotating equipment 3.2. Dusts/vapors 3.3. Hazardous materials 3.4. Knife hazards 3.5. Manual handling hazards
4. Routine problems	Typical routine process problems include: 4.1. Equipment malfunction 4.2. Product jamming or sticking 4.3. Power failure 4.4. Air, oil or lubricant difficulties Typical routine product problems include: 4.5. Variations in materials 4.6. Contamination of materials 4.7. Malformed or incomplete products

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Identified equipment control and procedures and understood the importance of critical material properties and quantities 1.2. Prepared for work/job 1.3. Maintained operations and recognized potential faulty situations requiring action and implemented appropriate action 1.4. Identified product quality requirements and ensured that production standards are met consistently
2. Underpinning knowledge and attitudes	2.1. Impact of incorrect or faulty materials 2.2. Production workflow sequences and materials demand 2.3. Operation of work systems and equipment 2.4. Selection and use of equipment, materials, processes and procedures 2.5. Hazards of the materials and process and appropriate hazard control procedures 2.6. Safety and emergency procedures and OHS and use of personal protective equipment 2.7. Honesty in work, Perseverance and Alertness
3. Underpinning skills	3.1. Read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators 3.2. Distinguish between causes of faults such as: • wrong raw materials/additives • incorrect quantity of materials/additives • contaminated materials/additives • product variations from specification 3.3. Participate in workplace meetings and discussions 3.4. Complete work related documents 3.5. Computing basic mathematical processes of addition, subtraction, division and multiplication 3.6. Gather and provide information in response to workplace requirements
4. Resource implications	The following resources **MUST** be provided: 4.1. Suitable access to an operating plant or equipment that allows for appropriate and realistic simulation 4.2. Tools, equipment and workplace relevant with the requirements for the job. 4.3. Supplies and consumable materials 4.4. A bank of case studies/scenarios and questions
5. Method of assessment	Competency **MUST** be assessed through: 5.1. Direct Observation with questioning 5.2. Oral interview and written test 5.3. Portfolio assessment
6. Context of assessment	6.1. Competency may be assessed individually in the actual workplace or a simulated workplace environment. 6.2. Practical skills must take place only after a period of supervised practice and repetitive experience. 6.3. Prescribe outcome must be able to achieve without direct supervision.

UNIT OF COMPETENCY : FINISH PRODUCTS AND COMPONENTS

UNIT CODE : ALT823307

UNIT DESCRIPTOR : This competency covers a range of processes subsequent to the actual making of the product which have been grouped together under the heading of "finishing". It applies to the finishing of products for customer use and the finishing components for use by a subsequent process or organization which may then further process or assemble these components into a finished product, and similar activities. It applies across all sectors of the industry.

This competency is typically performed by personnel working either independently or as part of a work team.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Establish requirements for the finishing process	1.1 Work requirements are identify from procedures 1.2 ***Equipment and consumables*** for the finishing process are assemble 1.3 Workplace procedures and materials safety data sheets are consulted to confirm the work planning process 1.4 ***Safety equipment*** are checked and ensured to be available and in sound condition 1.5 Products are removed from equipment if required using enterprise standard handling methods 1.6 End-of-product run are recognize.
2. Check quality of product	2.1 Products are inspected to identify for routine or non-routine finishing requirements. 2.2 Significant fining, flash or other quality problems are identified and reported to appropriate person for investigation of mold/die closure/alignment. 2.3 Modifications are check with appropriate personnel regarding to finishing process. 2.4 Non-conforming products are identified and processed in accordance with workplace procedures.
3. Undertake the finishing operation	3.1 Products are trimmed as required 3.2 Other secondary process operations are undertaken as required 3.3 Waste and recycling procedures are followed according to company standard operating procedures 3.4 Finished products are inspected and compared to specifications for suitability for further processing or for customer delivery 3.5 Finished products are assembled and sorted in accordance with procedures 3.6 Products are packed as required and according to packaging/stacking specifications 3.7 Product data are recorded as required 3.8 Work area are cleaned up and housekeeping is performed

4. Identify and rectify routine product imperfections	4.1 Range of ***routine imperfections*** that can occur during the production process are identified 4.2 ***Routine product imperfections*** are determined and rectified in accordance with procedures 4.3 Appropriate records and log books are maintained and ensure to meet procedures/work instructions. 4.4 Non-routine product imperfections are identified and reported to designated person.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Equipment and consumables	1.1. Electric and/or air powered routers, saws, drills, drivers and sanders 1.2. Hoist/jigs/lifting equipment 1.3. Handling aids such as jigs and gantries 1.4. Hand carts and trolleys 1.5. Knives, files and scrapers 1.6. Band saws, hand saws
2. Safety equipment	Personal safety equipment include but not limited to: 2.1. Gloves 2.2. Goggles or face shields 2.3. Safety shoes 2.4. Apron 2.5. Respiratory mask
3. Routine imperfections	3.1. Movement of jigs or fixtures 3.2. Power failure 3.3. Non-supply of materials 3.4. Broken cords 3.5. Damaged or inoperable equipment
4. Routine product imperfections	4.1. Variations in materials 4.2. Temperature of product to be finished 4.3. Movement of inserts, reinforcements or fittings 4.4. Size of some products

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Established requirements for the finishing process and recognized the importance of critical material properties and quantities to the finishing process 1.2. Checked quality of product 1.3. Undertaken the finishing operation 1.4. Identified and rectified routine product imperfections and ensured production standards are met consistently 1.5. Followed safety procedures.
2. Underpinning knowledge and attitudes	2.1. Different selection and application of finishing process 2.2. Different tools and equipment for the process 2.3. Safe handling of products 2.4. Procedure in waste and recycling management 2.5. Causes of faults such as : • flashing, distortion, stress marks, sinks, voids, short shot, poor color distribution, moisture marks, gassing, burn marks • inappropriate selection and use of finishing equipment/processes • poor surface finish • fining or shuts • variations in section thickness
3. Underpinning skills	3.1. Ability to read and interpret typical product specifications, job sheets and material labels as provided to operators 3.2. Perform routine workplace duties following simple written notices 3.3. Participate in workplace meetings and discussions 3.4. Complete work related documents 3.5. Basic mathematical processes of addition, subtraction, division and multiplication 3.6. Gather and provide information in response to workplace Requirements
4. Resource implications	The following resources **MUST** be provided: 4.1. Suitable access to an operating plant or equipment for simulation. 4.2. Tools, equipment and workplace relevant with the requirements for the job. 4.3. Supplies and consumable materials 4.4. Engineering manuals and drawings
5. Method of assessment	Competency **MUST** be assessed through: 5.1. Direct Observation with questioning 5.2. Written examination
6. Context of assessment	6.1. Competency may be assessed individually in the actual workplace or a simulated workplace environment. 6.2. Practical skills must take place only after a period of supervised practice and repetitive experience. 6.3. Prescribe outcome must be able to achieve without direct supervision.

SECTION 3 TRAINING STANDARDS

These standards are set to provide technical and vocational education and training (TVET) providers with information and other important requirements to consider when designing training programs for PLASTIC MACHINE OPERATION NC II.

3.1 CURRICULUM DESIGN

Course Title: **PLASTIC MACHINE OPERATION** NC Level **NC II**

Nominal Training Duration: **18 Hours** (Basic Competencies)
20 Hours (Common Competencies)
105 Hours (Core Competencies)

Course Description:

This course is designed to enhance the knowledge, skills and attitudes of an individual in the field of automotive manufacturing in accordance with industry standards. It covers competencies such as: Prepare molds for composites production, prepare materials to formulae, assemble materials and equipment for production, operate injection and blow molding equipment, monitor process operations and finish products and components.

.

To obtain this, all units prescribed for this qualification must be achieved.

BASIC COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Participate in workplace communication	1.1 Obtain and convey workplace information 1.2 Complete relevant work related documents 1.3 Participate in workplace meeting and discussion	• Group discussion • Interaction • Lecture • Reportorial	• Written test • Practical/ performance test • Interview
2. Work in a team environment	2.1 Describe and identify team role and responsibility in a team. 2.2 Describe work as a team member.	• Group discussion • Case studies • Simulation	• Written test • Observation • Simulation • Role playing
3. Practice career professionalism	3.1 Integrate personal objectives with organizational goals 3.2 Set and meet work problems 3.3 Maintain professional growth and development	• Interactive lecture • Structure activity • Simulation • Demonstration • Self-paced instruction	• Role play • Interview • Written examination

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
4. Practice occupational health and safety	4.1 Evaluate hazards and risks 4.2 Control hazards and risks 4.3 Maintain occupational health and safety awareness	• Interactive lecture • Simulation • Symposium • Group dynamics • Film viewing	• Situational analysis • Interview • Practical examination • Written exam • Portfolio assessment

COMMON COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Read, Interpret and Apply Engineering Drawings	1.1 Identify and access engineering drawings/ specification 1.2.Interpret drawings 1.3.Apply information in the drawings & specifications 1.4 Store drawings	• Lecture/ Demonstration • Dual training	• Direct observation • Interview
2. Perform Mensuration and Calculation	2.1. Select measuring instrument and 2.2 Carry out measurement and calculations. 2.3. Maintain measuring instruments	• Lecture/ Demonstration • Simulation • Exercises	• Written test • Oral questioning • Direct observation
3. Read, Interpret and Apply Specifications and Manual	4.1. Identify/accessed manuals and interpret data and specification 4.2 Apply information accessed in manual 4.3 Store manual	• Lecture/ Demonstration • Dual training • Distance Learning	• Written test • Direct observation • Project method • Interview
4. Perform Shop Maintenance	4.1 Inspect/clean tools and work area 4.2 Store/arrange tools and shop equipment 4.3 Dispose wastes/used lubricants 4.4 Report damaged tools/equipment	• Lecture/ Demonstration • Dual training • Self paced (modular) • Simulation	• Written test • Direct observation • Demonstration • Interview

CORE COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Prepare molds for composites production	1.1 Prepare surfaces 1.2 Apply mold release system 1.3 Mask up mold	• Lecture/ Demonstration • Dual training	• Demonstration w/ questioning • Observation w/ questioning • Interview • Portfolio
2. Prepare materials to formulae	2.1 Identify requirements to handle materials 2.2 Prepare for assembly of ingredients 2.3 Assemble ingredients	• Lecture/ Demonstration • Dual training	• Demonstration w/ questioning • Observation w/ questioning • Interview • Portfolio
3. Assemble Materials and Equipment for Production	3.1 Identify required materials and equipment 3.2 Select materials and equipment 3.3 Assemble materials and equipment 3.4 Organize internal workplace delivery of materials/ equipment 3.5 Store materials for production	• Lecture/ Demonstration • Dual training	• Demonstration w/ questioning • Observation w/ questioning • Interview • Portfolio
4. Operate injection molding equipment	4.1 Check work requirements 4.2 Conduct pre-start checks as required 4.3 Operate equipment 4.4 Resolve routine problems	• Lecture/ Demonstration • Dual training	• Demonstration w/ questioning • Observation w/ questioning • Interview • Portfolio
5. Operate blow molding equipment	5.1 Check work requirements 5.2 Conduct pre-start checks as required 5.3 Operate equipment 5.4 Resolve routine problems	• Lecture/ Demonstration • Dual training	• Demonstration w/ questioning • Observation w/ questioning • Interview • Portfolio
6. Monitor process operations	6.1 Identify equipment control and procedures 6.2 Get ready for work/job 6.3 Maintain operations 6.4 Identify product quality requirements	• Lecture/ Demonstration • Dual training	• Demonstration w/ questioning • Observation w/ questioning • Interview • Portfolio
7. Finish products and components	7.1 Establish requirements for the finishing process 7.2 Check quality of product 7.3 Undertake the finishing operation 7.4 Identify and rectify routine product imperfections	• Lecture/ Demonstration • Dual training	• Demonstration w/ questioning • Observation w/ questioning • Interview • Portfolio

3.2 TRAINING DELIVERY

The delivery of training should adhere to the design of the curriculum. Delivery should be guided by the 10 basic principles of competency-based TVET.

- The training is based on curriculum developed from the competency standards;
- Learning is modular in its structure;
- Training delivery is individualized and self-paced;
- Training is based on work that must be performed;
- Training materials are directly related to the competency standards and the curriculum modules;
- Assessment is based in the collection of evidence of the performance of work to the industry required standard;
- Training is based both on and off-the-job components;
- Allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Approved training programs are nationally accredited.

The competency-based TVET system recognizes various types of delivery modes, both on and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities may be adopted when designing training programs:

- The dualized mode of training delivery is preferred and recommended. Thus programs would contain both in-school and in-industry training or fieldwork components. Details can be referred to the Dual Training System (DTS) Implementing Rules and Regulations.
- Modular/self-paced learning is a competency-based training modality wherein the trainee is allowed to progress at his own pace. The trainer facilitates the training delivery
- Peer teaching/mentoring is a training modality wherein fast learners are given the opportunity to assist the slow learners.
- Supervised industry training or on-the-job training is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire specific competencies prescribed in the training regulations.
- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructor are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.

3.3 TRAINEE ENTRY REQUIREMENTS

Trainees or students should possess the following requirements:

- can communicate both oral and written;
- physically and mentally fit;
- with good moral character; and
- with experience in basic machining

This list does not include specific institutional requirements such as educational attainment, appropriate work experience, and others that may be required of the trainees by the school or training center delivering the TVET program.

3.4 TOOLS, EQUIPMENT AND MATERIALS PLASTIC MACHINE OPERATIONS NC II

Recommended list of tools, equipment and materials for the training of 20 trainees for PLASTIC MACHINE OPERATION NC II

TOOLS		EQUIPMENT		MATERIALS	
Qty.	**Description**	**Qty.**	**Description**	**Qty.**	**Description**
10 sets	Knives Files Scrapers Band saw, Hand saw	5 sets	Electric and/or powered routers, saw, drills drivers and sanders	1 set	Workplace procedure Work instruction Temporary instruction
		1 set	Hoist/jigs/lifting equipment	1 lot	Office supplies
		2 sets	Hand carts and trolley		
10 sets	Hand tools • Screw drivers • Pliers • Wrenches • Sockets and drivers	1 set	Bottom blow, top blow, needle blow, tail to tail blow, parison pre-blow and pre-squeeze, parison stretching and parison orientation type machines	20 sets	PPE • Gloves • Respiratory mask • Face shield • Safety shoes
		1 set	Die		
		1 set	Chillers/cooling towers		
		1 set	Die heating equipment		
		1 set	Hopper driers, mixing hoppers, dehumidifying driers		
		1 set	Air compressors		
		1 set	Dosing machines Color blending equipment and conveyors		
		1 set	Injection unit		
		1 set	Barrel and screw		

			plastification unit		
		1 set	Material loading equipment		
		1 set	Electrical, pneumatic, mechanical Electromechanical and hydraulic injection moulding machines and components such as base, frame, feed hoppers and material supply mechanisms		
		1 set	Measuring equipment		
		2 sets	Buffs and polishers		

3.5 TRAINING FACILITIES
PLASTIC MACHINE OPERATION NC II

The automotive workshop must be made of reinforced concrete or steel structure. The size must be suited on the requirements of the competencies. The class size of 25 students/trainees is reserved for the lecture room and the practical demonstration area for carrying out plastic machine operation training. Most of the learning activities such as plastic machine operation are performed in the workshop.

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS
• Building (permanent)	12.00 x 32.00	-	384.00
• Student/Trainee Working Space	2.50 x 2.50 per student/trainee	6.25 per student	156.25
• Contextual Learning Laboratory	4.00 x 5.00	20.00	20.00
• Lecture Room	4.00 x 7.00	28.00	28.00
• Learning Resource Center	4.00 x 5.00	20.00	20.00
• Facilities/Equipment/ Circulation Area	-	-	**159.75**

3.6 TRAINERS' QUALIFICATION

AUTOMOTIVE/LAND TRANSPORT SECTOR

PLASTIC MACHINE OPERATION NC II

TRAINER QUALIFICATION (TQ II)

- Must be a holder of PLASTIC MACHINE OPERATION NC II or equivalent qualification
- Must have undergone training on Training Methodology II (TM II) or equivalent in training/experience
- Must be computer literate
- Must be physically and mentally fit
- *Must have at least 2 years job/industry experience

- Must be a civil service eligible (for government position) or holder of appropriate professional license issued by the Professional Regulatory Commission

* Optional. Only when required by the hiring institution.

Reference: TESDA Board Resolution No. 2004 03

3.7 INSTITUTIONAL ASSESSMENT

Institutional assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1 To attain the National Qualification of PLASTIC MACHINE OPERATION NC II, the candidate must demonstrate competence through assessment covering all the units of competency listed in Section 1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.

4.2 Individual aspiring to be awarded the qualification of PLASTIC MACHINE OPERATION NC II must acquire Certificates of Competency in all the following core units of the Qualification. Candidates may apply for assessment in any accredited assessment center.

4.2.1 Operate Injection Molding Equipment

- Prepare Molds for Composite Production
- Prepare Materials to Formulae
- Assemble Materials and Equipment for Production
- Operate Injection Molding Equipment
- Monitor Process Operations
- Finish Products and Components

4.2.2 Operate Blow Molding Equipment

- Prepare Molds for Composite Production
- Prepare Materials to Formulae
- Assemble Materials and Equipment for Production
- Operate Blow Moulding Equipment
- Monitor Process Operations
- Finish Products and Components

Successful candidates shall be awarded Certificates of Competency (COC).

4.3 Accumulation and submission of all COCs acquired for the relevant units of competency comprising a qualification, an individual shall be issued the corresponding National Certificate.

4.4 Assessment shall focus on the core units of competency. The basic and common units shall be integrated or assessed concurrently with the core units.

4.5 The following are qualified to apply for assessment and certification:

4.5.1 Graduates of formal, non-formal and informal including enterprise-based training programs.

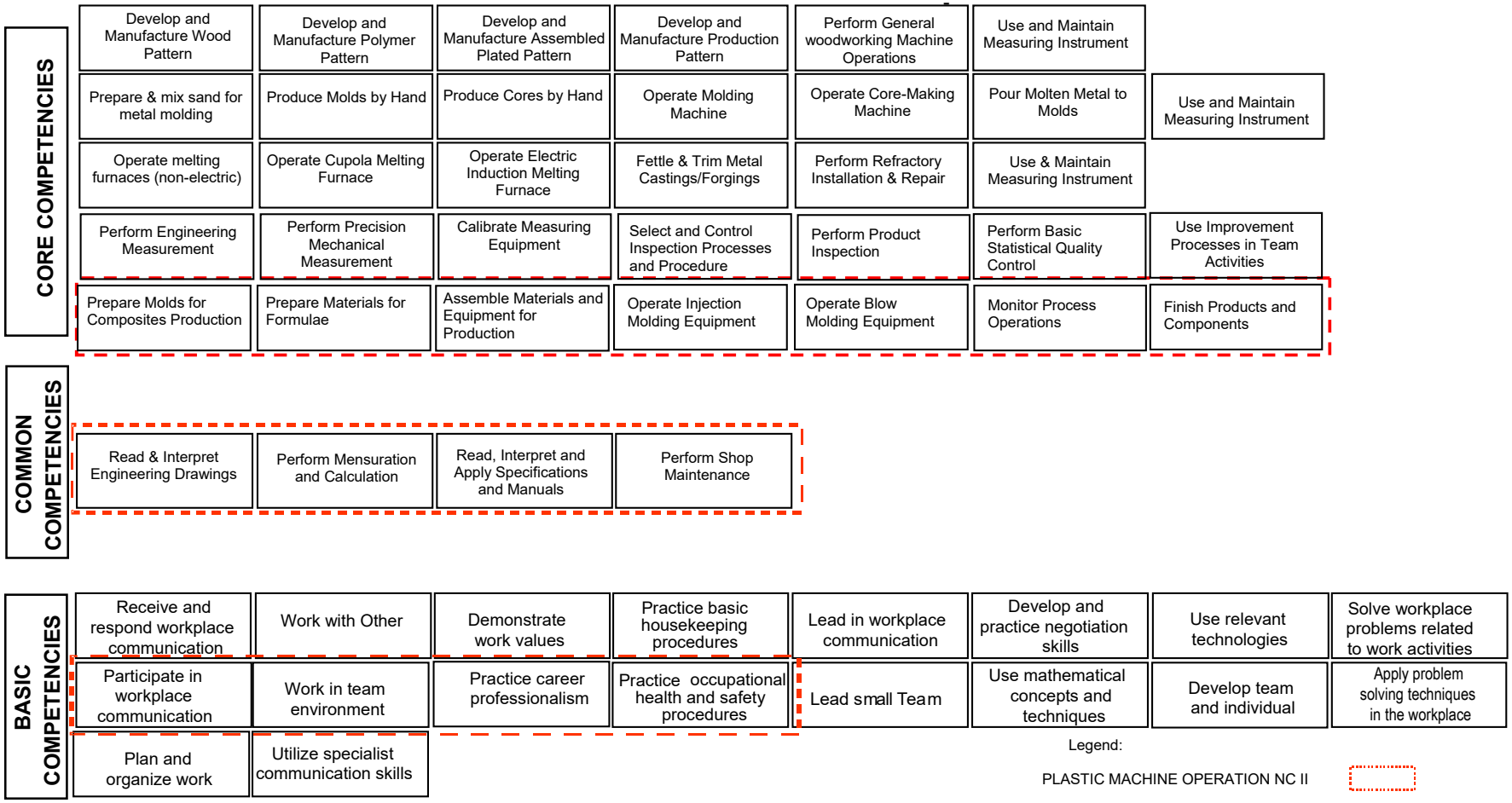
4.5.2 Experienced workers (wage employed or self employed)

4.6 The guidelines on assessment and certification are discussed in detail in the “Procedures Manual on Assessment and Certification” and “Guidelines on the Implementation of the Philippine TVET Qualification and Certification System (PTOQCS)”

COMPETENCY MAP- AUTOMOTIVE SECTOR
MANUFACTURING SUB-SECTOR
(Parts Manufacturing)

ANNEX A

PLASTIC MACHINE OPERATION NC II



DEFINITION OF TERMS

1. **Mold**	A former used to give the required shape to the product and which is not subject to pressure during use. Molds are typically used in the composites and rotational moulding industry. Moulds used for injection moulding, blow moulding, etc, are referred to as 'dies' in this Training Package.
2. **Die**	A former used to give the required shape to the product and which is used under pressure. Dies are typically used in the extrusion, injection, blow moulding and general rubber sectors. Dies used which are not subject to pressure are referred to as 'moulds' in this Training Package.
3. **PPE**	Personal Protective Equipment – the last line of defense against workplace hazards – includes things like safety boots, gloves, goggles, ear muffs.
4. Routine Problems	To 'rectify routine problems' means 'apply known solutions to a limited range of predictable problems'.
5. **OHSW**	Occupational health, safety and welfare.
6. **Composites**	Products consisting of a polymer matrix and a continuous layered reinforcing media. The reinforcing media include fiber, filament and cloth. The product is generally hand or machine fabricated.
7. **Calibration**	Instruments and other measuring equipment are calibrated to make sure the readings they yield are correct. To calibrate an instrument/item of equipment is a high level unit of competency. To check the calibration of an instrument/item of equipment is a routine part of using it and may be as simple as checking the date the calibration certificate expires.
8. **Engineering Control**	A subset of the hierarchy of control.
9. **Hierarchy of Control**	The preferred order of risk control measures from most to least preferred, that is: ▪ elimination ▪ substitution ▪ engineering controls ▪ administrative controls ▪ personal protective equipment.
10. **Integral**	Equipment which forms part of the operation of a main item of equipment is regarded as 'integral' to that main item. Examples include feed hoppers (and even blending feed hoppers) and heating and cooling devices. Typically equipment will be regarded as being 'integral' to the main item if: ▪ it is close/attached to the main item ▪ it has simultaneous operation with the main item ▪ it does not require significant additional knowledge or skills. Equipment is not integral if it has independent operation of its own.

ACKNOWLEDGEMENT

The Technical Education and Skills Development Authority (TESDA) wishes to extend thanks and appreciation to the many representatives of business, industry, academe and government agencies who rendered their time and expertise to the development and validation of this Training Regulation.

THE TECHNICAL AND INDUSTRY EXPERT PANEL

PLASTIC MACHINE NC II

Antonio A. Gimenez Philippine Automotive Federation, Inc. (PAFI)	**Rodolfo T. Nunez-** Plant Manager-Nissan Motors Phils. Inc.(NMPI) CATC/PAFI	**Elmo N. Serbito** PAFI (Samahan ng mga Manggagawang Supercast)

Carina J. Bondad

(Administrative Staff)

The PARTICIPANTS in the National Validation of this Training Regulation

- **(Supercast Foundry & Machinery Corp. SFMC)**
- **Philippine Aluminum Wheels Inc. (PAWI)**
- **Toyota Auto Parts Phils. Inc.**
- **Philippine Resin Sand (PRS)**
- **ASPEC Corp.**
- **Philippine Phospate (PHILPHOS)**

Members of the TESDA Board

The MANAGEMENT and STAFF of the TESDA Secretariat

TESDA EXCOM

Qualification and Standards Office

Florante P. Inoturan

Agnes P. Panem

Abel B. Elpedes