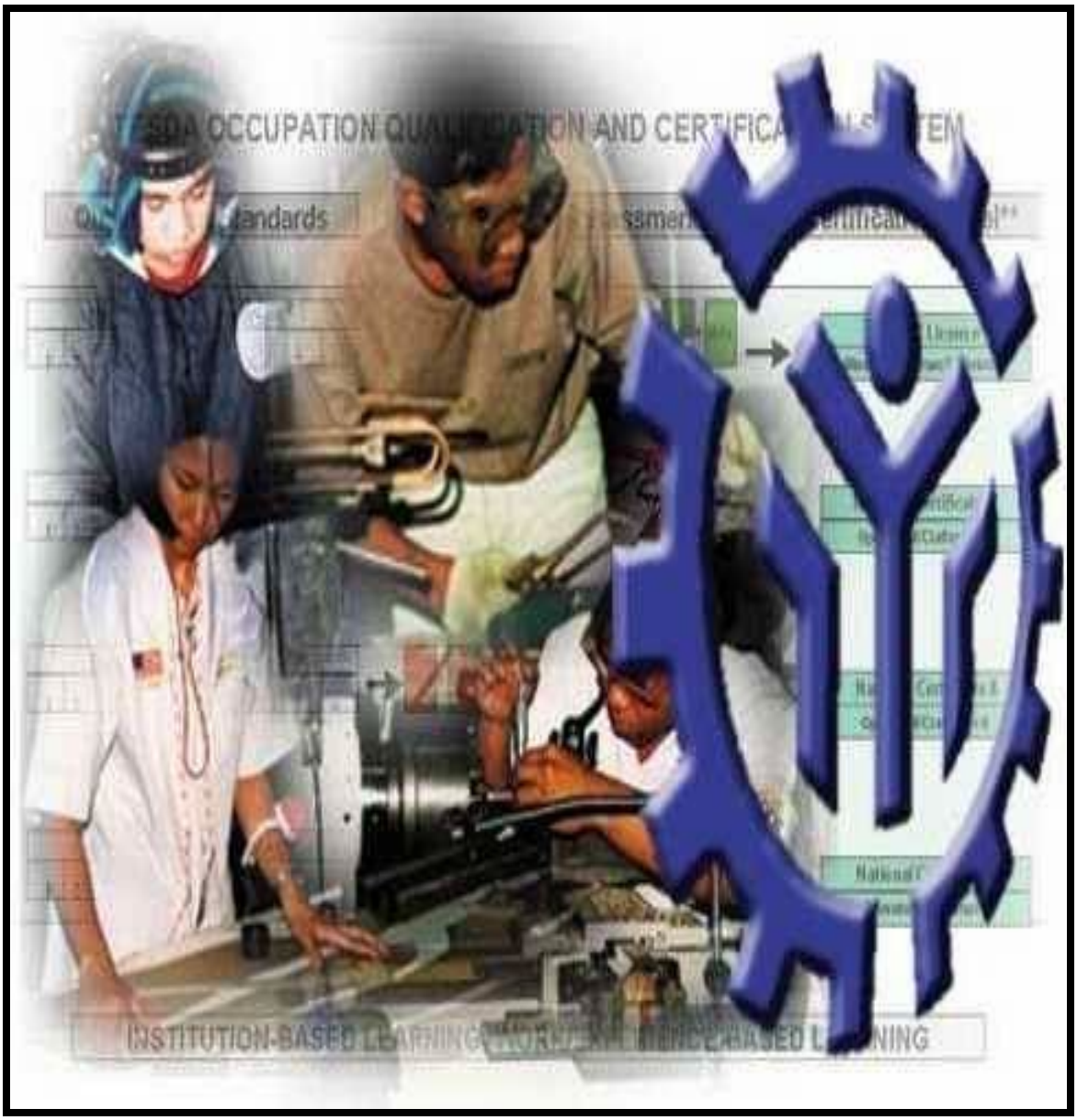
TRAINING REGULATIONS

PROCESS INSPECTION NC II



AUTOMOTIVE MANUFACTURING 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) serves 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 and trainer's qualification.

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

TABLE OF CONTENTS

AUTOMOTIVE MANUFACTURING SECTOR

PROCESS INSPECTION NC II

TRAINING REGULATIONS FOR PROCESS INSPECTION NC II

SECTION 1 PROCESS INSPECTION NC II QUALIFICATION

The PROCESS INSPECTION NC II Qualification consists of competencies that a person must achieve to perform standard quality inspection of processes in different manufacturing processes in the assembly, foundry, metal and plastic sectors. Most often, inspection involves working autonomously and taking responsibility for overseeing inspection process and environment. Inspection may involve 'first piece inspection', fixed interval, sample etc. Depending on the inspection process, other technical units may need to be accessed.

This person would use a wide range of equipment/instruments and take responsibility for the reliability of inspection results to ensure conformance with specifications. He can perform any work within a quality improvement system in a manufacturing, engineering or related environment.

The person can process the data he gathered, collating and interpreting statistical data in the context of statistical quality control, for example, tally, run or control charts. Uncontrolled variations are reported to appropriate authority. He is expected to identify improvements and/or solve problems, implement/monitor the implementation of an improvement strategy, and evaluate the improvement.

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 Engineering drawings
ALT311202	Perform Mensuration and Calculation
ALT723203	Read, Interpret and Apply Specifications and Manuals
ALT723204	Perform Shop Maintenance
CODE NO.	**COMMON COMPETENCIES**
ALT315301	Select and Control Inspection Processes and Procedures
ALT315302	Perform Inspection
ALT315303	Perform Basic Statistical Quality Control
ALT315304	Use Improvement Processes in Team Activities

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

- ❑ **Process Inspector**
- ❑ **QA/QC Inspector**

SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in PROCESS INSPECTION 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 maters concerning working conditions of employment are asked 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 is 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 5.2. Telephone 5.3. Electronic and two way radio 5.4. Written including electronic, memos, instruction and forms, non-verbal 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 and attitudes	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. Basic mathematical processes of 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	4.1. Fax machine 4.2. Telephone 4.3. Writing materials 4.4. Internet
5. Method of assessment	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 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 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 judgement 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 and attitude	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 designated 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/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 and attitudes	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
1. 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 : **SELECT AND CONTROL INSPECTION PROCESSES AND PROCEDURES**

UNIT CODE : **ALT315301**

UNIT DESCRIPTOR : This unit covers selecting inspection and test procedures, and controlling the inspection/test environment and equipment.

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ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Select inspection/test procedures	1.1 Appropriate ***methods of inspection*** are selected and implemented. 1.2 ***Inspection/test procedures*** are monitored to ensure desired outcomes.
2. Control inspection/test environment and equipment	2.1 Environmental conditions are monitored to ensure reliability of tests and results. 2.2 ***Equipment/instruments*** are checked for correct calibration. 2.3 Calibration of equipment/instruments is initiated or undertaken against appropriate standard as required. 2.4 Calibration records are maintained to standard operating procedure. 2.5 If equipment/instruments are found to be out of calibration, validity of previous results is checked and reported according to standard operating procedures.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Method of inspection	1.1Variable 1.2Attributes
2. Inspection/test procedure	2.1 Following sequence of inspection 2.2 Method of inspection

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Selected inspection or test procedures 1.2 Controlled inspection or test environment and equipment
2. Underpinning knowledge and attitudes	2.1 Range of inspection methods and their application 2.2 Appropriate inspection method for the process/product 2.3 Procedures for implementing inspection methods 2.4 Desired/target outcomes of the inspection/test procedures 2.5 Reasons for discrepancies/trends 2.6 Procedures for monitoring inspection/test procedures 2.7 Effects of environmental conditions on test equipment and the results 2.8 Procedures for monitoring environmental conditions 2.9 Acceptable range of variations to environmental conditions 2.10 Correct operation of the measuring equipment 2.11 Specifications of the measuring equipment 2.12 Procedures for checking the calibration of the measuring equipment 2.13 Appropriate techniques, tools and equipment to measure components 2.14 Units of measurement and numerical operations/calculations within the scope of this unit 2.15 Codes, standards, legislative or regulatory requirements applicable to the measuring equipment and/or calibration 2.16 Procedures for initiating the calibration of measuring equipment 2.17 Physical reference standard against which the measuring equipment is to be calibrated 2.18 Procedures for calibrating measuring instruments 2.19 Tools and equipment required to calibrate measuring equipment 2.20 Procedures for recording calibration details 2.21 Reasons for keeping calibration records 2.22 Procedures to be followed when measuring equipment is found to be out of calibration 2.23 Reasons for checking results from out of calibration measuring equipment 2.24 Procedures for reporting out of calibration measuring equipment 2.25 Hazards and control measures associated with inspection, including housekeeping 2.26 Use and application of personal protective equipment 2.27 Safe work practices and procedures
3. Underpinning skills	3.1 Reading, interpreting and following information on standard operating procedures and other applicable reference documents 3.2 Checking and clarifying task-related information 3.3 Entering and maintaining information onto proformas and standard workplace forms and records 3.4 Checking for conformance to specifications 3.5 Using measurement equipment within the scope of this unit 3.6 Measuring components to specified tolerances 3.7 Implementing inspection method for the product/ process 3.8 Monitoring inspection/test procedures to ensure desired outcomes are achieved 3.9 Monitoring environmental conditions 3.10 Checking calibration of measuring equipment 3.11 initiating calibration of measuring equipment 3.12 Calibrating measuring equipment against the appropriate reference

	standard 3.13 Detecting and reporting out-of-calibration equipment 3.14 Applying units of measurement and numerical operations/calculations within the scope of this unit 3.15 Practicing safety procedures in handling materials, recording and reporting associated with performing inspection
4. Resource implications	The following resources **MUST** be provided: 4.1 Workplace area: Real or simulated 4.2 Access to all tools, equipment, materials and documentation required 4.3 Any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
5. Method of assessment	Competency **MUST** be assessed through: 5.1 Direct observation with oral questioning 5.2 Portfolio 5.3 Third-party report
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.

UNIT OF COMPETENCY : **PERFORM PRODUCTS INSPECTION**

UNIT CODE : **ALT315302**

UNIT DESCRIPTOR : This unit covers inspecting products, keeping records and providing feedback on the conformance of product to specifications.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Inspect products	1.1 Sample products are gathered as per company ***standard operating procedures for inspection*** 1.2 Products are ***tested for conformance to specifications*** in accordance with standard operating procedures
2. Keep records	2.2 Test status identification is made on conforming and non-conforming products and records are accurately kept using standard operating procedures. 2.3 Inspection sheets are completely filled-out as per company standard operating procedures
3. Provide feedback	3.1 Products are tested/inspected/measured after rework or repair. 3.2 ***Deficiencies or deviations*** are reported according to standard operating procedures.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Standard operating procedures	1.1 When process is at control state-random sampling 1.2 When uncontrolled state – 100% inspection
2. Tested for conformance with specifications	2.1 Visual inspection 2.2 Physical measurements 2.3 Chemical tests 2.4 Checks against patterns 2.5 Templates and guides etc.
3. Deficiencies	3.1 Product faults 3.2 Process faults 3.2.1 Man 3.2.2 Machine 3.2.3 Materials 3.2.4 Method

EVIDENCE GUIDE

1. Critical aspects of competencies	Assessment requires evidence that the candidate: Inspected products 1.2 Kept records 1.3 Provided feedback
2. Underpinning knowledge and attitudes	2.1 Procedures as defined by job instructions to be used to check conformance to specifications 2.2 Data to be recorded and the frequency of recording required 2.3 Consequences of not keeping accurate records 2.4 Non-conformances of given products that can be removed by rework/repair in accordance with job instructions 2.5 Hazards and control measures associated with performing basic inspection activities 2.6 Use and application of personal protective equipment 2.7 Safe work practices and procedures
3. Underpinning skills	3.1 Reading, interpreting and following information on written job instructions, standard operating procedures and other applicable reference documents 3.2 Testing products for conformance to specifications in accordance with job instructions 3.3 Testing reworked/repaired products for conformance to specification, in accordance with job instructions entering routine and familiar information onto proformas and standard workplace forms 3.5 Practice safety and quality in materials handling, recording and reporting associated with performing inspection.
4. Resource implications	The following resources **MUST** be provided: 4.1 Workplace area: Real or simulated 4.2 Access to all tools, equipment, materials and documentation required 4.3 Any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
5. Method of assessment	Competency **MUST** be assessed through: 5.1 Direct observation with oral questioning 5.2 Demonstration with oral questioning 5.3 Portfolio 5.4 Third-party report
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.

UNIT OF COMPETENCY: **PERFORM BASIC STATISTICAL QUALITY CONTROL**

UNIT CODE : **ALT315303**

UNIT DESCRIPTOR : This unit covers taking samples and applying a statistical process to monitor production.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Take samples	1.1 Difference between population and sample is understood and various ***sampling schemes*** are applied in accordance with standard operating procedures. 1.2 Samples are taken on control-state to verify the effectiveness of countermeasures
2. Apply statistical process to monitor production	2.1 Concept of variation in terms of average and spread is understood. Data is used to ***produce relevant statistical information.*** 2.2 Data is interpreted accurately and information is presented to appropriate authority according to standard operating procedures

RANGE OF VARIABLE

VARIABLE	RANGE
1. Sampling schemes	1.1 Agreed customer plans 1.2 Acceptable Quality Level (AQL) and Average Outgoing Quality Level (AOQL) plans 1.3 Shainin 1.4 Six Sigma etc.
2. Relevant statistical information	Average, range and process control data and the plotting of charts such as: 2.1 Line graphs 2.2 Run charts 2.3 Tally charts 2.4 Histograms 2.5 Control charts 2.6 Random 2.7 Assignable causes etc.

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidences that the candidate: 1.1 Took samples 1.2 Applied statistical processes to monitor production
2. Underpinning knowledge and attitudes	2.1 Difference between population and sample, and the concept of variation in terms of average and range, random and assignable causes 2.2 Numerical operations and statistical calculations/formulae within the scope of this unit 2.3 Statistical process control procedures, which may include Six Sigma etc. and the sampling procedures to be followed 2.4 Types of charts that can be produced to assist monitoring of products including run charts, tally charts, histograms, control charts 2.5 Procedures for reporting sample data information 2.6 Use and application of personal protective equipment 2.7 Safe work practices and procedures
3. Underpinning skills	3.1 Reading, interpreting and following information on written job instructions, standard operating procedures, charts, lists, drawings and other applicable reference documents 3.2 Applying statistical process control procedures in accordance with instructions to a given production process 3.3 Obtaining data from samples including average, range and random or assignable causes 3.4 Producing tally, run or control charts from sampling data 3.5 Reporting information from sampling data 3.6 Checking and clarifying task-related information 3.7 Completing proformas and standard workplace forms 3.8 Practices safety and quality in material handling, recording and reporting associated with performing basic statistical quality control
4. Resource implications	The following resources **MUST** be provided: 4.3 Workplace area: Real or simulated 4.4 Access to all tools, equipment, materials and documentation required 4.3 Any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
5. Method of assessment	Competency **MUST** be assessed through: 5.1 Direct observation with oral questioning 5.2 Demonstration with oral questioning 5.3 Portfolio 5.4 Third-party report
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.

UNIT OF COMPETENCY : **USE IMPROVEMENT PROCESSES IN TEAM ACTIVITIES**

UNIT CODE : **ALT315304**

UNIT DESCRIPTOR : This unit covers identifying improvements and/or solving problems, implementing/monitoring the implementation of an improvement strategy, and evaluating the improvement.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify areas for improvement and/or solve problems	1.1 Participation in team is used to select ***improvement tools and methods*** appropriate to the situation. 1.2 Teamwork is used to process improvement tools to identify improvements and/or solve problems.
2. Contribute to improvement strategy	2.1 Teamwork is used to implement ***improvement strategies*** as required in accordance with standard operating procedures. 2.2 In conjunction with work team, further action is recommended as required using standard operating procedures.
3. Monitor implementation of improvement	3.1 Performance is monitored for change, utilizing feedback data. 3.2 Analytical tools are used to monitor improvement as required. 3.3 In conjunction with work team, further action is recommended where required using standard operating procedures.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Improvement tools and methods	1.1 Flow charts 1.2 Cause and effect diagrams 1.3 Pareto charts 1.4 Histograms 1.5 Run charts and graphs 1.6 Control charts 1.7 Scattergrams etc.
2. Improvement strategies	2.1 PDCA (Plan, Do, Check, Act) procedures 2.2 Six Sigma techniques 2.3 Root Cause Analysis etc.

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified areas for improvement and/or solve problems 1.2 Contributed to improvement strategy 1.3 Monitored implementation of improvement
2. Underpinning knowledge	2.1 Roles and functions of self and team members 2.2 Team discussion and problem solving processes 2.3 Improvement tools and methods and their application 2.4 Procedures for using process improvement tools in the team environment 2.5 Improvement strategies 2.6 Procedures for implementing the improvement strategies 2.7 Individual's role in implementing improvement strategies 2.8 Procedures for initiating further action 2.9 Procedures for collecting and collating improvement feedback data 2.10 Analytical tools and processes to evaluate the improvement strategy
3. Underpinning skills	3.1 Participating and communicating in a team setting 3.2 Identifying improvements and/or solving problems in a team setting 3.3 Implementing improvement strategies in a team setting 3.4 Recommending further action in accordance with standard operating procedures 3.5 Collecting and collating feedback data 3.6 Evaluating the improvement strategy implemented 3.7 Reading, interpreting information on written job instructions, specifications, charts, lists, drawings and other applicable reference documents 3.8 Planning and sequencing tasks 3.9 Checking and clarifying information 3.10 Entering information onto workplace documents 3.11 Following verbal instructions
4. Resource implications	The following resources **MUST** be provided: Workplace area: Real or simulated 4.1 Access to all tools, equipment, materials and documentation required 4.3 Any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
5. Method of assessment	Competency **MUST** be assessed through: 5.1 Observation with questioning 5.2 Portfolio 5.3 Third party report
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.

SECTION 3 TRAINING STANDARDS

These guidelines are set to provide the Technical and Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for PROCESS INSPECTION NC II.

3.1 CURRICULUM DESIGN

Course Title: **PROCESS INSPECTION NC** NC Level: **NC II**

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

Course Description:

This course is designed to equip individual with competency to perform inspection of process in various manufacturing fields such as assembly, stamping, machining, foundry and others in the metal and plastic sector.

It also includes competencies on interpreting specifications, drawings, technical sketches and/or customer requirements. Tasks undertaken would also include utilizing appropriate inspection techniques; designated procedures, correct and appropriate tools and equipment for measurement of parameters; sets up and operates variety of specialized precision measuring instrument in operating

This course is also designed to provide basic and common skills to equip individual with operational skills in process inspection.

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	• Demonstration • Observation • Interviews/ questioning
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.	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
3. Practice career professionalism	3.1 Integrate personal objectives with organizational goals. 3.2 Set and meet work priorities. 3.3 Maintain professional growth and development.	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
4. Practice occupational health and safety	4.1 Evaluate hazard and risks 4.2 Control hazards and risks 4.3 Maintain occupational health and safety awareness	• Discussion • Plant tour • Symposium	• Observation • Interview

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 • Self paced (modular) • Distance Learning	• Written test • Oral questioning • Direct observation • Project method • Interview
2. Perform Mensuration and Calculation	2.1 Select measuring instrument and carry out measurement and calculations. 2.2 Maintain measuring instruments	• Lecture/ Demonstration • Dual training • Self paced (modular) • Distance Learning	• Written test • Oral questioning • Direct observation • Project method • Interview
3. Read, Interpret and Apply Specifications and Manual	3.1 Identify/accessed manuals and interpret data and specification 3.2 Apply information accessed in manual 3.3 Store manual	• Lecture/ Demonstration • Dual training • Self paced (modular) • Distance Learning	• Written test • Oral questioning • 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) • Distance Learning	• Written test • Oral questioning • Direct observation • Project method • Interview

CORE COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Select and control inspection processes and procedures	1.1 Select and implement appropriate methods of inspection 1.2 Monitor inspection/test procedures Control inspection/test environment and equipment 1.3 Monitor environmental conditions to ensure reliability of tests 1.4 Check calibration of equipment or instruments 1.5 Calibrate equipment/ instruments using appropriate standards and maintain calibration records according to standard operating procedure.	• Demonstration	• Direct Observation • Questioning • Interview • Practical test
2. Perform product inspection	2.1 Inspect products 2.2 Keep records 2.3 Provide feedback	• Demonstration • Discussion	• Practical test
3. Perform basic statistical quality control	3.1 Take samples 3.2 Apply statistical process to monitor production	• Demonstration • Discussion	• Written examination • Demonstration of practical skills • Practical Test
4. Use improvement processes in team activities	4.1 Identify areas for improvement and/or solve problems 4.2 Implement improvement strategy 4.3 Monitor implementation of improvement 4.4 Evaluate improvement	• Demonstration • Discussion	• Direct Observation • Questioning • Interview • Practical test

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 learner-centered and should accommodate individualized and self-paced learning strategies;
- 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 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.
- Project-Based Instruction is an authentic instructional model or strategy in which students plan, implement and evaluate projects that have real world applications.

3.3 TRAINEE ENTRY REQUIREMENTS

This section specifies the qualifications of trainees and educational experience. Other requirements like health and physical requirements are also stated. Passing written entry examinations may also be indicated if necessary.

- Preferably with background in basic machining
- With good moral character;
- Ability to communicate both orally and in writing; and
- Physically and mentally fit

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS PROCESS INSPECTION NC II

Recommended list of tools, equipment and materials for the training of 25 trainees for PROCESS INSPECTION NC II

TOOLS		EQUIPMENT		MATERIALS	
QTY		QTY		QTY	
10 units	Verbier caliper	1 units	Optical Pyrometer	6 pcs	Batteries (1.5v & 9 v)
25 units	Steel rule	1 unit	Contact or immersion Pyrometer	24 pcs	Thermocouple cups
10 units	Micrometer	2 units	Hardness Testers (portable)		
14 units	Sampling tools	2 units	Moisture testers	2 sets.	Heating elements
14 units	Magnifying glass	2 set	Sanding or grinding machine	4 belts or stones.	Sand paper (#120 to 400)
2 units	Ford cup #4	2 units	Sand rammer	2 kls.	White rag (De Hilo)
25 pcs.	Rubber glove	1 set	Desk top computer		
25 pcs.	Cotton glove	3 units	Printer		
25 pcs.	Nylon glove				
25 pcs.	Goggle				
25 pcs.	Gas mask				
25 pcs.	Safety shoe				
25 pcs.	Apron				

3.5 TRAINING FACILITIES
PROCESS INSPECTION NC II

Based on a class size of 25 students/trainees

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS
• Building (permanent)	26.00 x 28.00	728.00	728.00
• Trainee Working Space	3.50 x 3.50 per student/trainee	12.25 per student	306.00
• Lecture Room	9.00 x 10.00	90.00	90.00
• Learning Resource Center	5.00 x 8.00	40.00	40.00
• Facilities/ Equipment/ Circulation Area	-	-	291.75

3.6 TRAINER'S QUALIFICATIONS FOR AUTOMOTIVE SECTOR MANUFACTURING SUB-SECTOR

PROCESS INSPECTION NC II
TRAINER QUALIFICATION (TQ II)

- Must be a holder of Process Inspection NC II or equivalent qualification
- Must have undergone training on Training Methodology II (TM II)
- 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 or holder of appropriate professional license issued by the Professional Regulatory Commission (for government position)

* 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 PROCESS INSPECTION NC II, the candidate must demonstrate competence in all the units listed in Section 1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.

4.2 The qualification of PROCESS INSPECTION NC II may be attained through.

4.2.1 Demonstration of competence through project-type assessment covering all required units of competency of the qualification.

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

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

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

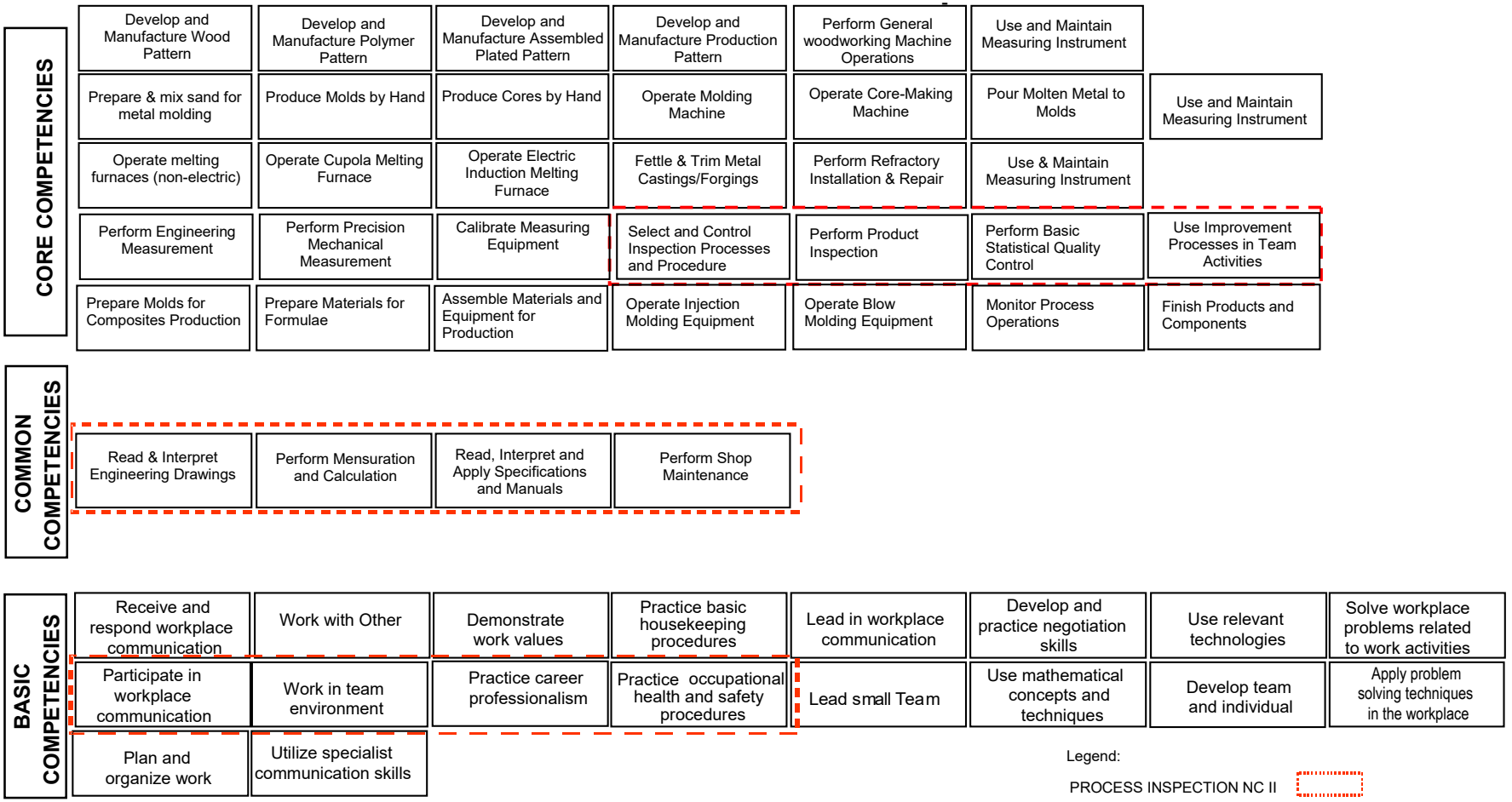
4.4.2 Experienced workers (wage employed or self-employed)

4.5 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 (PTQCS)*.

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

ANNEX A

PROCESS INSPECTION NC II



DEFINITION OF TERMS

1.	**Bore gauge**	**Bore gauge** is a measuring tool used for measuring the internal diameter of a cylindrical tube.
2.	**Data**	**Data** is the information collected about a product, service, process, person or machine.
3.	**Domain**	**Domain** is the set of possible values specified for a given mathematical function.
4.	**Flashing**	**Flashing** is a defect where resin flow out to the parting line of the mold and adheres to the part of the product, especially commonly seen in old mold.
5.	**Flowchart**	**Flowchart** is a pictorial summary of the flows and decisions that comprise a process. It is used for defining and documenting the process.
6.	**Gantt chart**	**Gantt chart** is a **scheduling chart** in which horizontal lines show the actual and projected amounts of time involved in completing a particular task or reaching specific levels of production it is is a bar chart that plots tasks and subtask against time.
7.	**Histogram**	**Histogram** is a statistical graph of frequency distribution in which vertical rectangles of different heights are proportionate to corresponding frequencies.
8.	**Ishikawa diagram**	**Ishikawa diagram** is a tool used to organize the possible causes of a problem, select the most probable cause, and verify the cause and effect relationship between the most probable cause and the problem under study.
9.	**Jetting**	**Jetting** or sometimes called flow marks is a defect that shows visible marks of movement as the materials enter the mold.
10.	**Mean**	**Mean** is a numerical representation of the arithmetic average it is the sum of the numerical values of the measurement divided by the number of items examined.
11.	**Median**	**Median** is the middle value when the data are arranged in ascending order. When there are an even number of observations, the median value is the arithmetic average of the middle two values.
12.	**Mode**	**Mode** of a distribution is the value that occurs most frequently, or the value corresponding to the highest point on a frequency polygon or histogram.
13.	**Pareto analysis**	**Pareto analysis** is the tool of analysis using the concept that focuses attention on the vital few against the trivial many.
14.	**Process**	**Process** is a collection of interacting components that transform inputs into outputs toward a common aim.
15.	**Short shot**	**Short shot** is a defect that occurs when the resin cools and solidifies before the material fills the mold completely.
16.	**Shrinkage**	**Shrinkage** is a defect that forms a cavity in a casting caused by insufficient amount of metal during solidification

17. The range — **The range** is the simplest measure of dispersion; for raw data from an enumerative or an analytic study, it is defined as the difference between the largest data point and the smallest.

18. Tolerance — **Tolerance** is the allowable variance from a nominal value established by design engineers that is deemed non harmful to the functioning of the product.

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