



**NATIONAL OCCUPATIONAL STANDARDS/NATIONAL SKILLS
QUALIFICATION**

(NOS/NSQ)

MACHINING

LEVEL II

OCTOBER, 2025

GENERAL INFORMATION

OVERVIEW

This qualification is designed for learners interested in pursuing a career in machining, leading to the award of National Skills Qualifications (NSQ). It aims to produce semi-skilled workers or assistants in Machining, at NSQ Level 2, with the competencies necessary to support the Machining workshop.

This qualification is subject to review as needed.

QUALIFICATION PURPOSE

This qualification is designed to develop competence in assisting with machining.

QUALIFICATION REQUIREMENTS

All Candidates must:

1. Be medically fit
2. Be physically fit
3. Be mentally fit (Mental alertness)
4. Have achieved all the mandatory units in the qualification
5. Be vetted

QUALIFICATION OBJECTIVES

At the end of the qualification, the learner should be able to:

1. Apply occupational health, safety, and environmental guidelines
2. Communicate appropriately in a working environment with team members
3. Work in an environment as a team member.
4. Identify the parts and operate the Lathe machine
5. Perform basic machining operations such as turning, facing, and threading on the lathe machine
6. Accurately measure, mark out, and inspect using precision tools
7. Conduct basic machine maintenance to ensure sufficient performance.
8. Interpret Basic Engineering drawings and prepare Hand Sketches.

UNIT ASSESSMENT/EVIDENCE REQUIREMENTS:

Assessment must be carried out in real workplace environment in which learning and human development is carried out. Simulation is allowed in this unit and level.

Assessment Methods to be Used Include:

1. Direct Observation (DO)
2. Question and Answer (QA)

3. Witness Testimony (WT)
4. Personal statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)

(This depends on the Trade Areas to be assessed)

NATIONAL BOARD FOR TECHNICAL EDUCATION

NATIONAL SKILLS QUALIFICATION (NSQ) TABLE**LEVEL II
MACHINING****MANDATORY UNITS**

Unit	Unit Reference Number	Unit Title	Credit Value	Guided Learning Hours
1	ENG/MCH/001/L2	Health, Safety and Environment	2	20
2	ENG/MCH/003/L2	Communication	2	20
3	ENG/MCH/002/L2	Teamwork	2	20
4	ENG/MCH/004/L2	Introduction to machining	2	20
5	ENG/MCH/005/L2	Introduction to the lathe machine.	3	30
6	ENG/MCH/006/L2	Lathe machine operations	3	30
7	ENG/MCH/007/L2	Materials, Tools, Speeds and Feeds selection	4	40
8	ENG/MCH/008/L2	Measurement and Marking Out	2	20
9	ENG/MCH/009/L2	Turning operations	3	30
10	ENG/MCH/010/L2	Basic Engineering drawing	3	30
11	ENG/MCH/011/L2	Tolerance, Fits and Limits	2	20
12	ENG/MCH/012/L2	Maintenance of the lathe machine.	2	20
13	ENG/MCH/013/L2	Tools Handling and Maintenance	2	20
14	ENG/MCH/014/L2	Workshop on electrical systems	2	20
TOTAL			34	340

GENERAL GUIDE

Unit Title	Provides a clear explanation of the content of the unit.
Unit Number	The unique number assigned to the unit
Unit Reference	The unique reference number given to each unit at qualification approval by NBTE
Unit Level	Denotes the level of the unit within the National Skills Qualifications Framework NSQF.
Unit Credit Value	The value that has been given to the unit based on the expected learning time for an average learner. 1 credit value = 10 guided learning hours
Unit Purpose	Provides a brief outline of the unit content.
Learning Outcome	A statement of what a learner will know, understand or be able to do, as a result of learning process.
Assessment Criteria	A description of the requirements a learner must achieve to demonstrate that a learning outcome has been met.
Unit Assessment Guidance	Any additional guidance provided to support the assessment of the unit.
Unit Guided Learning Hours	The average number of hours of supervised or directed study time or assessment required to achieve a qualification or unit of qualification.

UNIT 001:	Health, Safety and Environment
Unit Reference Number:	ENG/MCH/001/L2
NSQ Level:	2
Credit Value:	2
Guided Learning Hours:	20hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills required for site safety, health and environment policies and procedures, maintaining good personal hygiene and application of safe work procedures.

Unit assessment requirements/evidence requirements

Assessment must be carried out in real workplace environment in which learning and human development training is carried out. Simulation is allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS)

(This depends on the Trade Areas to be assessed)

UNIT 001: Health, Safety and Environment

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC) The learner can:	Evidence Type	Evidence Ref. Page Number
The learner will:				
LO 1: <i>Know how to maintain personal health and hygiene</i>	1.1	Wear clean, smart and appropriate Personal Protective Equipment.		
	1.2	Work safely at all times, complying with health and safety and other relevant regulations and guidelines.		
	1.3	Identify first aid personnel to apply first aid to treat any cuts, grazes and wounds.		
	1.4	Report illness and infection promptly to the appropriate persons.		
	1.5	State own responsibility under the Health and Safety Act as it relates to own occupation.		
	1.6	State general rules on hygiene that must be followed.		
	1.7	List Personal Protection Equipment		
	1.8	State the importance of maintaining good personal Hygiene.		
LO 2: <i>Maintain a hygienic, safe and hazard free workplace.</i>	2.1	State the importance of working in a healthy, safe and hygienic workplace		
	2.2	Follow health, hygiene and safety procedures during work		
	2.3	Describe emergency procedures during work		
	2.4	Describe organizational security procedures		
	2.5	Explain the disposal of waste and pollution control with organic and inorganic waste disposal methods.		
	2.6	Identify any hazards or potential hazards and how to deal with it correctly.		
	2.7	Describe the types of hazards in the workplace that may occur and how to deal with them		
	2.8	State hazards that can be dealt with personally and those that should be reported to someone else		

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC) The learner can:	Evidence Type	Evidence Ref. Page Number
The learner will:				
	2.9	State where information about health and safety in your workplace can be obtained		
LO 3: <i>Maintain a hygienic, safe and secure workplace</i>	3.1	State how to warn other people about hazards and why this is important		
	3.2	State why accidents and near accidents should be reported and who they should be reported to		
	3.3	Describe the types of emergencies that may happen in the workplace and how to deal with them		
	3.4	State where to find the first-aid equipment and who the registered first-aider is in the workplace		
	3.5	State safe lifting and handling techniques that should be followed		
	3.6	State other ways of working safely that are relevant to own position and why they are important		
	3.7	Describe organizational emergency procedures, in particular fire, and how these should be followed		
	3.8	State the possible causes of fire outbreak in the workplace		
	3.9	Describe how to minimize the risk of fire outbreak in the workplace		
	3.10	State where to find the alarms and how to set them off		
	3.11	State why a fire should never be approached unless it is safe to do so.		
	3.12	State the importance of following the fire safety laws		
	3.13	Describe organizational security procedures and why these are Important		

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC) The learner can:	Evidence Type		Evidence Ref. Page Number
The learner will:					
	3.14	State the importance of reporting all usual or non- routine incidents to the appropriate personnel			
LO 4: <i>Know General Workshop safety</i>	4.1	Describe Safety rules guiding specific machine			
	4.2	Identify hearing protection required			
	4.3	Identify eye protection required			
	4.4	Identify required Footwear			

Learners Signature:	Date:
Assessors Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 002: Communication

Unit reference number: ENG/MCH/002/L2

NSQ Level: 2

Credit Value: 2

Guided Learning Hours: 20 hours

Unit Purpose: This unit is designed to equip learners with the knowledge and skills necessary to establish a high-quality communication system in the workplace.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a real-world workplace environment where learning and human development training take place. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 002: Communication

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know the communication system in a work environment</i>	1.1	Use simple verbal means to pass on necessary information		
	1.2	Use nonverbal means to convey necessary information, such as body language.		
	1.3	Explain symbols and signs appropriately.		
LO 2: <i>Know Sources of information in a work Environment</i>	2.1	Locate the source of information in an organisation and work environment.		
	2.2	Relate appropriately with sources of information.		
	2.3	Use the general information flow systems in a work environment.		
	2.4	Use information to avoid challenges in a work situation.		
	2.5	Report findings in accordance with the procedure in a work environment.		
LO 3: <i>Know basic communication in a work environment</i>	3.1	Locate the various communication equipment in the work environment		
	3.2	Use communication equipment in a work Environment.		
	3.3	Relate information effectively to the proper personnel.		
	3.4	Pass information effectively using Symbols, Signs and Codes.		
	3.5	Comply with general instructions in line with the ethics of the work environment.		

Unit 003:**TEAM WORK****Unit Reference Number:** ENG/MCH/003/L3**NSQ Level:** 1**Credit Value:** 2**Guided Learning Hours:** 20 hours

Unit Purpose: This unit is designed to equip learners with the knowledge and skills necessary to foster team spirit and cultivate a positive working relationship with colleagues.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a real-world workplace environment where learning and human development training occur. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 003: Team Work

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Positive working relationships with colleagues</i>	1.1	Identify the need for developing positive working relationships with colleagues.		
	1.2	Recognise the importance of relating to other people in a way that makes them feel valued and respected.		
	1.3	Assist team members when required.		
	1.4	Communicate information to colleagues about one's own work that might affect others.		
LO 2: <i>Take responsibilities within the team.</i>	2.1	Recognise own role and responsibilities within the team.		
	2.2	Perform individual tasks in line with the team rules and regulations.		
	2.3	Participate effectively in teamwork.		
LO 3: <i>Compliance with the policy of the organisation</i>	3.1	Work in line with the organisational standards.		
	3.2	Use the organisational Code of Practice.		
	3.3	Explain the organisational Code of Conduct.		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 004: Introduction to Machining

Unit Reference Number: ENG/MCH/004/L2

NSQ Level: 2

Credit Value: 2

Guided Learning Hours: 20 hours

Unit Purpose: This unit is designed to provide the learner with the basic knowledge of machining

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training take place. Simulation is not allowed at this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 004: Introduction to Machining

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref.	Page Number
The learner will:		The learner can:			
LO 1: <i>Know machining</i>	1.1	Define Machining			
	1.2	List Machining career opportunities			
	1.3	Explain the Scope of Machining			
	1.4	Describe the Application of Machining			
LO 2: <i>Know a machinist</i>	2.1	Describe a machinist			
	2.2	List operations that a machinist carries out			
	2.3	List various tools used by a machinist.			
	2.4	List the Materials most often worked on by a machinist.			
LO 3: <i>Know basic machinist skills</i>	3.1	List the soft skills required to be a good machinist			
	3.2	List the Hard skills required to be a good machinist.			
	3.3	List essential tools a machinist must use (Measuring tools, cutting tools, job holding tools, etc.)			

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EOA Signature (if sampled)	Date:

Unit 005:**Introduction to Lathe Machine**

Unit Reference Number: ENG/MCH/005/L2

NSQ Level: 2

Credit Value: 3

Guided Learning Hours: 30 hours

Unit Purpose: This unit is designed to provide learners with the basic knowledge and skills required to identify the components of a lathe machine.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a real-world workplace environment where learning and human development training occur. Simulation is not allowed within this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 005: Introduction to Lathe Machine

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref.	Page Number
The learner will:		The learner can:			
LO 1: <i>Know the Lathe machine</i>	1.1	Describe the lathe machine			
	1.2	Explain the types of lathe machines.			
	1.3	List parts of the lathe machine			
	1.4	Identify parts of the lathe machine.			
	1.5	List basic operations performed on the lathe machine.			
LO 2: <i>Know Functions of Lathe Machine Parts</i>	2.1	Identify Headstock			
	2.2	Describe Headstock			
	2.3	List the components of the Headstock.			
	2.4	Identify components of the Headstock.			
	2.5	Describe the functions of the Headstock.			
	2.6	Identify Carriage			
	2.7	Describe Carriage			
	2.8	List the components of the Carriage.			
	2.9	Identify components of Carriage.			
	2.10	Describe the functions of the Carriage.			
	2.11	Identify the Tail stock.			
	2.12	Describe the Tail stock.			
	2.13	List the components of the Tail stock.			
	2.14	Identify components of the Tail stock.			
	2.15	Describe the functions of the Tail stock.			
	2.16	Identify Lathe Bed			
	2.17	Describe Lathe Bed			
	2.18	List the components of the Lathe Bed.			
	2.19	Identify components of the Lathe Bed.			
	2.20	Describe the functions of the Lathe Bed.			

Unit 006:**Basic Lathe Machine Operations****Unit Reference Number:** ENG/MCH/006/L2**NSQ Level:** 2**Credit Value:** 3**Guided Learning Hours:** 30 hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills required to operate a lathe machine.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training take place. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 006: Basic Lathe Machine Operations

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know pre-start checks on the lathe machine.</i>	1.1	Perform necessary checks to prevent damage to the machine.		
	1.2	Perform necessary checks to prevent accidents - Remove materials (chips, keys) on the lathe - Unsafe conditions, etc.)		
	1.3	Identify the Emergency stop button.		
	1.4	Operate the Emergency stop button.		
LO 2: <i>Know workpiece holding and centring operations.</i>	2.1	Explain workpiece holding operations.		
	2.2	Explain Centring operations		
	2.3	Explain the types of centres and chunks.		
	2.4	Demonstrate mounting, balancing, and centring.		
	2.5	Select workpiece holding and mount the workpiece on the machine.		
	2.6	Perform facing under supervision.		
	2.7	Perform centring under supervision.		
LO 3: <i>Know basic turning operations</i>	3.1	Perform Plain turning on the lathe under supervision.		
	3.2	Perform Step turning on the lathe under supervision.		
	3.3	Perform facing on the lathe under supervision.		
	3.4	Perform Centring and drill operations on the lathe under supervision.		

Learner's Signature:	Date:
Assessor's Signature:	Date:
IOA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 007:

Materials, Tools, Speeds and Feeds Selection

Unit Reference Number: ENG/MCH/007/L2**NSQ Level:** 2**Credit Value:** 4**Guided Learning Hours:** 40 hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills required to select appropriate material, speed, and feed for turning operations.

Unit assessment requirements/evidence requirements.

Assessment must take place in a real workplace environment where learning and human development training occur. Simulation is not allowed at this level and unit.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 005: Materials, Tools, Speeds and Feeds Selection

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref.	Page Number
The learner will:		The learner can:			
LO 1: <i>Know various materials in lathe operations</i>	1.1	Define material in engineering.			
	1.2	List types of engineering material			
	1.3	Identify metallic material			
	1.4	State the advantages of various metallic materials.			
LO 2: <i>Know the properties of metal</i>	2.1	Describe basic metal properties			
	2.2	Identify the use of different metals based on their properties.			
	2.3	Select an appropriate metal for the specific component to be produced.			
LO 3: <i>Know how to select tools</i>	3.1	List turning tools			
	3.2	Identify different turning tools.			
	3.3	Select appropriate tools according to the material type.			
	3.4	Mount the tools appropriately on the lathe machine.			
	3.5	Determine the appropriate coolant for the tools selected.			
LO 4: <i>Know cutting speed</i>	4.1	Determine the cutting speed for different turning operations			
	4.2	Select the cutting speed for different materials.			
	4.3	Select the cutting speed for different types of tools.			
LO 5: <i>Know appropriate tool feed</i>	5.1	Determine tool feed for different turning operations (Roughing, Finishing)			
	5.2	Select the tool feed for different materials.			
	5.3	Select feed for different types of tools.			

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 008:**Measurement and Marking Out****Unit Reference Number:** ENG/MCH/008/L2**NSQ Level:** 1**Credit Value:** 2**Guided Learning Hours:** 20 hours

Unit Purpose: This unit is designed to equip learners with basic knowledge and skills for measurement and marking-out operations.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training take place. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 008: Measurement and Marking Out

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know measurement Units</i>	1.1	Define measurement		
	1.2	Explain SI units of measurement.		
	1.3	State measuring units for the following: - Length - Mass - Area - Volume - Temperature		
	1.4	List basic measuring tools.		
	1.5	Use measuring tools to carry out the measurement.		
	1.6	Explain the importance of accuracy in measurement.		
LO 2: <i>Know the marking out operation</i>	2.1	Define marking-out		
	2.2	List basic marking-out tools.		
	2.3	List various methods of marking out.		
	2.4	Perform the marking out operation.		
LO 3: <i>Know care for marking and measuring tools</i>	3.1	Explain how to care for measuring tools.		
	3.2	Carry out care for measuring tools.		
	3.3	Explain how to care for marking-out tools.		
	3.4	Carry out care for marking out tools.		

Learner's Signature:	Date:
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 009: Turning Operations

Unit Reference Number: ENG/MCH/009/L2

NSQ Level: 2

Credit Value: 3

Guided Learning Hours: 30 hours

Unit Purpose: This unit is designed to provide learners with the knowledge and skills necessary to perform turning operations, including taper turning, threading, and grooving.

Unit assessment requirements/evidence requirements.

Assessment must be carried out in a real workplace environment where learning and human development training is conducted. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 009: Turning Operations

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref.	Page Number
The learner will:		The learner can:			
LO 1: <i>Know the Taper turning operation on the lathe machine</i>	1.1	Determine the taper angle from the given drawing			
	1.2	Set the compound slide to achieve the given angle.			
	1.3	Select an appropriate taper turning tool.			
	1.4	Take the taper measurement.			
LO 2: <i>Know the grooving operation on the lathe machine</i>	2.1	Select grooving tools			
	2.2	Cut a V-groove on the lathe machine.			
	2.3	Cut a Square groove on the lathe machine.			
	2.4	Take groove measurement			
LO 3: <i>Know the thread cutting operation on the lathe machine</i>	3.1	Determine Pitch of the Thread			
	3.2	Select the gears required for the Thread operation.			
	3.3	Cut the thread on the lathe machine.			
	3.4	Measure thread			

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EOA Signature (if sampled)	Date:

Unit 010: Basic Engineering Drawing

Unit Reference Number: ENG/MCH/010/L2

NSQ Level: 2

Credit Value: 3

Guided Learning Hours: 30 hours

Unit Purpose: This unit is designed to equip learners with the knowledge and skills required for sketching and interpreting drawings.

Unit assessment requirements/evidence requirements.

Assessment must be carried out in a real workplace environment where learning and human development training is conducted. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 010: Basic Engineering Drawing

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA (PC) The learner can:	Evidence Type	Evidence Ref. Page Number
LO 1: <i>Know basic elements of drawing</i>	1.1	Define drawing and sketches		
	1.2	List types of lines in drawing		
	1.3	Explain the uses of different types of lines.		
	1.4	Explain drawing symbols and abbreviations.		
LO 2: <i>Know simple dimensions in drawing</i>	2.1	Explain the purpose of dimensioning		
	2.2	List types of dimensions		
	2.3	Place dimensions in the appropriate position in a drawing.		
LO 3: <i>Interpret simple drawings</i>	3.1	Explain how to interpret a simple drawing.		
	3.2	Explain how to obtain information from a given drawing.		
	3.4	Explain how to obtain the material size from a given drawing.		
LO 4: <i>Know simple hand sketches</i>	4.1	Sketch simple isometric shapes		
	4.2	Sketch a simple Orthographic drawing.		
	4.3	Properly dimension hand sketches		

Learner's Signature:

Date

Assessor's Signature:

Date:

IOA Signature (if sampled)

Date:

EQA Signature (if sampled)

Date:

Unit 011: Tolerance, Fits and Limits

Unit Reference Number: ENG/MCH/011/L2

NSQ Level: 2

Credit Value: 2

Guided Learning Hours: 20 hours

Unit Purpose: This unit is designed to provide learners with the knowledge and skills required to apply Tolerance, fits, and Limits for a given task.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training takes place. Simulation is not allowed at this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 011: Tolerance, Fits and Limits

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know Tolerance in Machining</i>	1.1	Define tolerance		
	1.2	Explain the use of tolerance.		
	1.3	State type of tolerance (Unilateral, Bilateral)		
	1.4	State the advantages of tolerance.		
LO 2: <i>Understand Limits</i>	2.1	Define Limits		
	2.2	Explain the type of Limits (lower and upper)		
	2.3	Explain the application of limits.		
LO 3: <i>Know Basic Fits</i>	3.1	Define fits		
	3.2	Explain basic types of fits.		
	3.3	Identify basic fits		
	3.4	Select basic fits		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 012: Maintenance of Lathe Machine

Unit Reference Number: ENG/MCH/012/L2

NSQ Level: 2

Credit Value: 2

Guided Learning Hours: 20 hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills required to carry out basic Lathe machine maintenance.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training take place. Simulation is not allowed at this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 012: Maintenance of Lathe Machine

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know basic lathe machine maintenance</i>	1.1	Define maintenance		
	1.2	List types of maintenance		
	1.3	Explain Preventive and Routine maintenance		
	1.4	Explain why maintenance of the lathe machine is essential.		
LO 2: <i>Know Routine and Preventive Maintenance</i>	2.1	Identify lubrication points		
	2.2	Clean and lubricate the Lathe machine parts		
	2.3	Properly trueing, oiling the machine bed and guideway.		
	2.4	Removal of chips from the conveyor and tray		
LO 3: <i>Know Maintenance Records.</i>	3.1	Explain the maintenance record.		
	3.2	Explain the machine history card.		
	3.3	Maintain the machine history card.		
	3.4	Demonstrate recording on the Machine History card.		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 013: Tools Handling and Maintenance

Unit Reference Number: ENG/MCH/013/L2

NSQ Level: 2

Credit Value: 2

Guided Learning Hours: 20 hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills required for proper tool handling and maintenance

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training takes place. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 013: Tools Handling and Maintenance

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know Tools Handling</i>	1.1	Identify tools for the job		
	1.2	Move tools properly.		
	1.3	Mount tools properly during usage		
LO 2: <i>Know Maintenance and Care of Tools</i>	2.1	Identify defects in tools.		
	2.2	Identify an appropriate lubricant for tool protection.		
	2.3	Lubricate tools against corrosion		
	2.4	Store tools in: - Toolbox - Metal cabinet - Holder(chisels)		
LO 3: <i>Know Tools Requisition Procedure and Record</i>	3.1	Explain how to fill out the tool requisition form.		
	3.2	State the procedure for tool requisition.		
	3.3	Request tools for the cutting operation		
	3.4	Return tools after use		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 014: Workshop Electrical Systems

Unit Reference Number: ENG/MCH/014/L2

NSQ Level: 2

Credit Value: 2

Guided Learning Hours: 20 hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills of introductory workshop electrical systems

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training takes place. Simulation is not allowed at this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 014: Workshop Electrical Systems

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know Basic Workshop on Electrical Fittings and Components</i>	1.1	Identify basic electrical fittings used in workshops (switches, sockets, plugs, lighting points, fuses, and extension outlets, etc.)		
	1.2	Classify electrical fittings according to their functions and ratings (e.g., lighting, power, control)		
	1.3	Identify basic electrical symbols, signs, and colour codes used in the workshop.		
LO 2: <i>Know Basic Electrical Faults</i>	2.1	Identify simple electrical faults (e.g., blown fuse, loose connection, faulty switch) through visual inspection.		
	2.2	Report electrical faults promptly to qualified electrical technicians.		
	2.3	Explain the logout and tagout procedure.		
LO 3: <i>Know Basic Electrical Routine Checks</i>	3.1	Perform physical checks on the machine's electrical interface connections to ensure they are secure and properly connected.		
	3.2	Perform a physical inspection to ensure the machine's electrical insulation is intact.		
	3.3	Collaborate with electrical technicians during preventive maintenance operations.		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:



NATIONAL SKILLS QUALIFICATIONS

(NSQ)

MACHINING

LEVEL 3

OCTOBER, 2025

GENERAL INFORMATION

OVERVIEW

This qualification is designed for learners seeking to build a career in fitting, leading to the award of a National Skills Qualification (NSQ). It targets the development of semi-skilled workers or assistants in machining, NSQ Level 3, equipped with the skills needed to assist in the Fitting workshop.

QUALIFICATION PURPOSE

This qualification is targeted at developing competence and assistance in machining

QUALIFICATION REQUIREMENTS

All candidates must:

- a. Be medically fit
- b. Be physically fit.
- c. Be mentally fit (Mental alertness)
- d. Have achieved all the mandatory units in the qualification.
- e. Be vetted
- f. Basic acknowledgement of how to read and write

UNIT ASSESSMENT/EVIDENCE REQUIREMENTS:

Assessment must be carried out in real workplace environment in which learning and human development is carried out. Simulation is allowed in this unit and level.

Assessment Methods to be Used Include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)

(This depends on the Trade Areas to be assessed)

NATIONAL SKILLS QUALIFICATION (NSQ) TABLE**LEVEL III: MACHINING****MANDATORY UNITS**

Unit	Unit Reference Number	Unit Title	Credit Value	Guided Learning Hours
1	ENG/MCH/001/L3	Health, Safety and Environment	2	20
2	ENG/MCH/002/L3	Communication	2	20
3	ENG/MCH/003/L3	Teamwork	2	20
4	ENG/MCH/004/L3	Tolerance, Fits and Limits	2	20
5	ENG/MCH/005/L3	Introduction to the Milling Machine.	4	40
6	ENG/MCH/006/L3	Milling Machine Operations	5	50
7	ENG/MCH/007/L3	Materials, Tools, Speeds and Feeds selection	4	40
8	ENG/MCH/008/L3	Introduction to Indexing	3	30
9	ENG/MCH/009/L3	Maintenance of Milling Machine.	3	30
10	ENG/MCH/010/L3	Tools Handling and Maintenance	4	40
11	ENG/MCH/011/L3	Introduction to Shaping and Slotting Machine	3	30
TOTAL			34	340

GENERAL GUIDE

Unit Title	Provides a clear explanation of the unit's content.
Unit Number	The unique number assigned to the unit.
Unit Reference	The unique reference number given to each unit at qualification approval by NBTE.
Unit Level	Denotes the level of the unit within the National Skills Qualification Framework NSQF.
Unit Credit Value	The value assigned to the unit is based on the expected learning time for an average learner. 1 credit = 10 learning hours
Unit Aim	Provides a brief outline of the unit content.
Learning Outcome	A statement of what a learner will know, understand or be able to do, as a result of a process of learning.
Assessment Criteria	A description of the requirements a learner must achieve to demonstrate that the learning outcome has been met.
Unit Assessment Guidance	Any additional guidance provided to support the assessment of the unit.
Unit Guided Learning Hours	The average number of hours of supervised or directed study time or assessment required in achieving the qualification or unit of the qualification.

UNIT 001: Health, Safety and Environment

Unit Reference Number: ENG/MCH/001/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hour: 20 hours

Unit Purpose: This unit is designed to provide the trainee with knowledge and skills of health and safety in work environment.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training takes place. Simulation is not allowed at this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Personal statement/Learning Journal (PS/LJ)
3. Questions and Answers (QA)
4. Witness Testimony (WT)
5. Assignment (ASS)
6. Work Products (WP)

(This depends on the Trade Areas to be assessed)

Unit 001: Health, Safety and Environment

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA (PC) The learner can:	Evidence Type		Evidence Ref. Page Number
LO 1: <i>Know Health and Safety Rules in Work Environment</i>	1.1	Familiarize with work environment			
	1.2	Explain safe work practice when working with welding equipment.			
	1.3	List Personal Protective Equipment (PPE) in welding operations			
	1.4	Identify Personal Protective Equipment (PPE)			
	1.5	List common hazards in welding operations			
	1.6	Use Personal Protective Equipment (PPE)			
	1.7	Explain preventive measures for 1.5 above			
	1.8	Explain how to respond to accident in work environment.			
	1.9	Explain accident report procedure			
	1.10	Explain first aid procedures			
LO 2: <i>Know Safety Guidelines for Welding Operations</i>	2.1	Explain different regulations guiding welding practice (NIS ISO 15012-4)			
	2.2	Identify safety signs and codes in the welding workshop			
	2.3	Observe health and safety signs always.			
	2.4	Work safely to protect self and others			
LO 3: <i>Know Fire Safety</i>	3.1	Explain classes of fire			
	3.2	Explain causes of fire outbreak in a work environment			
	3.3	Explain emergency and fire procedure			
	3.4	List methods of extinguishing fire			
	3.5	List types of fire extinguishers			
	3.6	Demonstrate how to use appropriate fire extinguisher.			
	3.7	Follow fire and safety procedure			

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Learner's Signature:	Date:
Assessor's Signature:	Date:
IQAM Signature (if sampled)	Date:
EQAM Signature (if sampled)	Date:

NATIONAL BOARD FOR TECHNICAL EDUCATION

Unit 002: Communication

Unit reference number: ENG/MCH/002/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hours: 20 hours

Unit Purpose: This unit is designed to equip learners with the knowledge and skills necessary to establish a high-quality communication system in the workplace.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a real-world workplace setting where learning and human development training occur. Simulation is not allowed at this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 002: Communication

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know the Communication System in a Work Environment</i>	1.1	Use simple verbal means to pass on necessary information		
	1.2	Use nonverbal means to convey necessary information, such as body language.		
	1.3	Explain symbols and signs appropriately.		
LO 2: <i>Know Sources of Information in a Work Environment</i>	2.1	Locate the source of information in an organisation and work environment.		
	2.2	Relate appropriately with sources of information.		
	2.3	Use the general information flow systems in a work environment.		
	2.4	Use information to avoid challenges in a work situation.		
	2.5	Report findings in accordance with the procedure in a work environment.		
LO 3: <i>Know Basic Communication in a Work Environment</i>	3.1	Locate the various communication equipment in the work environment		
	3.2	Use communication equipment in a work Environment.		
	3.3	Relate information effectively to the proper personnel.		
	3.4	Pass information effectively using Symbols, Signs and Codes.		
	3.5	Comply with general instructions in line with the ethics of the work environment.		

Learner's Signature:

Date

Assessor's Signature:

Date:

IQA Signature (if sampled)

Date:

EQA Signature (if sampled)

Date:

NATIONAL BOARD FOR TECHNICAL EDUCATION

Unit 003:

Teamwork

Unit Reference Number: ENG/MCH/002/L3**NSQ Level:** 3**Credit Value:** 2**Guided Learning Hours:** 20 hours

Unit Purpose: This unit is designed to equip learners with the knowledge and skills necessary to foster team spirit and cultivate a positive working relationship with colleagues.

Unit assessment requirements/evidence requirements.

Assessment must take place in a genuine workplace environment where learning and human development training occur. Simulation is not allowed within this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 003: Team Work

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Positive Working Relationships with Colleagues</i>	1.1	Identify the need for developing positive working relationships with colleagues.		
	1.2	Recognise the importance of relating to other people in a way that makes them feel valued and respected.		
	1.3	Assist team members when required.		
	1.4	Communicate information to colleagues about one's own work that might affect others.		
LO 2: <i>Take Responsibilities Within the Team.</i>	2.1	Recognise own role and responsibilities within the team.		
	2.2	Perform individual tasks in line with the team rules and regulations.		
	2.3	Participate effectively in teamwork.		
LO 3: <i>Compliance with the Policy of the Organisation</i>	3.1	Work in line with the organisational standards.		
	3.2	Use the organisational Code of Practice.		
	3.3	Explain the organisational Code of Conduct.		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 004: Tolerance, Fits and Limits

Unit Reference Number: ENG/MCH/004/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hours: 20 hours

Unit Purpose: This unit is designed to provide learners with the knowledge and skills of tolerance, fits, and limits.

Unit assessment requirements/evidence requirements.

Assessment must take place in a genuine workplace environment where occurring and human development training occurs. Simulation is not allowed at this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 004: Tolerance, Fits and Limits

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know the Standard Tolerance in Machining</i>	1.1	Describe tolerance		
	1.2	Explain the use of tolerance.		
	1.3	Identify types of tolerance (Unilateral, Bilateral)		
	1.4	Explain fundamental deviations		
	1.5	Describe the advantages of tolerance.		
	1.6	List tolerance grades and their application.		
LO 2: <i>Know Limits</i>	2.1	Describe Upper Limits		
	2.2	Describe Lower Limits		
	2.3	Describe the application of limits.		
LO 3: <i>Know Fits</i>	3.1	Describe fits		
	3.2	Describe whole basis fits.		
	3.3	Describe shaft basis fits.		
	3.4	Select fits		
	3.5	Apply Clearance, transition, and interference fits.		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 005:**Introduction to Milling Machine****Unit Reference Number:** ENG/MCH/005/L3**NSQ Level:** 3**Credit Value:** 4**Guided Learning Hours:** 40 hours

Unit Purpose: This unit is designed to provide the learner with the basic knowledge and skills required to identify the components of a milling machine.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training is carried out. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 005: Introduction to Milling Machine

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know the Milling Machine</i>	1.1	Describe a Milling machine		
	1.2	Explain the types of Milling machines.		
	1.3	List parts of the Milling machine		
	1.4	Identify parts of the Milling machine.		
	1.5	List basic operations performed on the Milling machine.		
LO 2: <i>Know the Functions of Milling Machine Parts</i>	2.1	Identify the milling machine column.		
	2.2	Describe the milling machine column.		
	2.3	List the components of the milling machine column.		
	2.4	Identify components of the milling machine column.		
	2.5	Describe the functions of the milling machine column.		
	2.6	Identify the milling machine overarm.		
	2.7	Describe the milling machine overarm.		
	2.8	List the components of the milling machine overarm.		
	2.9	Identify components of the milling machine overarm.		
	2.10	Describe the functions of the milling machine overarm.		
	2.11	Identify the milling machine worktable.		
	2.12	Describe the milling machine worktable.		
	2.13	List the components of the milling machine worktable.		
	2.14	Identify components of the milling machine worktable.		
	2.15	Describe the functions of the milling machine worktable.		
	2.16	Identify the milling machine spindle.		
	2.17	Describe the milling machine spindle.		
	2.18	List the components of the milling machine spindle.		

Unit 006:**Milling Machine Operations****Unit Reference Number:** ENG/MCH/006/L3**NSQ Level:** 3**Credit Value:** 5**Guided Learning Hours:** 50 hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills required to operate Milling machines.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training take place. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 005: Milling Machine Operations

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know Pre-start Checks on the Milling Machine.</i>	1.1	Perform necessary checks to prevent machine damage		
	1.2	Perform necessary checks to prevent accidents - Remove materials (chips, keys) on the lathe - Unsafe conditions, etc.)		
	1.3	Identify the Emergency stop button.		
	1.4	Operate the Emergency stop button.		
LO 2: <i>Know Workpiece Holding on the Milling Machine</i>	2.1	Identify workpiece holding devices.		
	2.2	Describe workpiece holding using Vices.		
	2.3	Describe workpiece holding using Fixtures.		
	2.4	Describe workpiece holding directly on the table		
LO 3: <i>Know Milling Operations</i>	3.1	List milling operations		
	3.2	Explain side/end milling operations.		
	3.3	Carry out side/end milling operations.		
	3.4	Explain face milling operations.		
	3.5	Carry out face milling operations.		
	3.6	Mill a slot on a shaft		
LO 4: <i>Know Keyways and Slots Milling</i>	4.1	Explain Keyway milling		
	4.2	Explain slots milling		
	4.3	Perform angular milling		
	4.4	Perform slot milling operations.		
	4.5	Perform keyway milling operations.		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 007:

Materials, Tools, Speeds and Feeds Selection

Unit Reference Number: ENG/MCH/007/L3**NSQ Level:** 3**Credit Value:** 4**Guided Learning Hours:** 40 hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills required to select appropriate material, speed, and feed for milling operations.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training take place. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 005: Materials, Tools, Speeds and Feeds Selection

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know various materials in milling operations</i>	1.1	Define material in engineering.		
	1.2	List types of engineering material		
	1.3	Identify metallic material		
	1.4	State the advantages of various metallic materials.		
LO 2: <i>Know the Properties of Metal</i>	2.1	Describe basic metal properties		
	2.2	Identify the use of different metals based on their properties.		
	2.3	Select an appropriate metal for the specific component to be produced.		
LO 3: <i>Know how to Select Tools</i>	3.1	List milling tools		
	3.2	Identify different milling tools.		
	3.3	Select appropriate tools according to the material type.		
	3.4	Mount the tools appropriately on the milling machine		
	3.5	Determine the appropriate coolant for the tools selected.		
LO 4: <i>Know the Cutting Speed</i>	4.1	Determine the cutting speed for different turning operations		
	4.2	Select the cutting speed for different materials.		
	4.3	Select the cutting speed for different types of tools.		
LO 5: <i>Know Appropriate Tool Feed</i>	5.1	Determine the tool feed for different milling operations		
	5.2	Select the tool feed for different materials.		
	5.3	Select feed for different types of tools.		

Learner's Signature:

Date

Assessor's Signature:

Date:

IQA Signature (if sampled)

Date:

EQA Signature (if sampled)

Date:

Unit 008:**Introduction to Indexing****Unit Reference Number:** ENG/MCH/008/L3**NSQ Level:** 3**Credit Value:** 3**Guided Learning Hours:** 30 hours

Unit Purpose: This unit is designed to provide the learner with knowledge and skills of fundamental indexing

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training takes place. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 005: Introduction to Indexing

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know Indexing</i>	1.1	Identify the dividing head.		
	1.2	List parts of the dividing head		
	1.3	Identify parts of the dividing head.		
	1.4	List types of indexing plates		
	1.5	Identify indexing plates		
LO 2: <i>Know the Types of Indexing</i>	2.1	List types of indexing		
	2.2	Describe simple indexing		
	2.3	State the use of simple indexing.		
LO 3: <i>Practice Simple Indexing</i>	3.1	Mill Square shape using simple indexing		
	3.2	Mill a hexagonal shape using simple indexing		
	3.3	Mill Eight splines using simple indexing		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 009:**Maintenance of Milling Machine****Unit Reference Number:** ENG/MCH/009/L3**NSQ Level:** 3**Credit Value:** 3**Guided Learning Hours:** 30 hours

Unit Purpose: This unit is designed to provide learners with the knowledge and skills required to carry out basic maintenance on milling machine tools.

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a genuine workplace environment where learning and human development training take place. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 009: Maintenance of Milling Machine

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know Basic Milling Machine Maintenance</i>	1.1	Define maintenance		
	1.2	List types of maintenance		
	1.3	Explain Preventive and Routine maintenance		
	1.4	Explain why maintenance of the lathe machine is essential.		
LO 2: <i>Know Routine and Preventive Maintenance</i>	2.1	Identify lubrication points		
	2.2	Clean milling machine parts		
	2.3	Lubricate milling machine parts		
	2.4	Properly trueing, oiling the machine bed and guideway.		
	2.5	Removal of chips from the conveyor and tray		
LO 3: <i>Know Maintenance Records.</i>	3.1	Explain the maintenance record.		
	3.2	Explain the machine history card.		
	3.3	Maintain the machine history card.		
	3.4	Demonstrate recording on the Machine History card.		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 010:

Tools Handling and Maintenance

Unit Reference Number: ENG/MCH/010/L3**NSQ Level:** 3**Credit Value:** 4**Guided Learning Hours:** 40 hours

Unit Purpose: This unit is designed to provide the learner with the knowledge and skills required for proper tool handling and maintenance

Unit assessment requirements/evidence requirements.

Assessment must be conducted in a real workplace environment where learning and human development training take place. Simulation is not allowed at this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 010: Tools Handling and Maintenance

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know Tools Handling</i>	1.1	Identify tools for the job		
	1.2	Move tools properly.		
	1.3	Mount tools properly during usage		
LO 2: <i>Know Maintenance and Care of Tools</i>	2.1	Identify defects in tools.		
	2.2	Identify an appropriate lubricant for tools protection.		
	2.3	Lubricate tools against corrosion		
	2.4	Store tools in: • Toolbox • Metal cabinet		
LO 3: <i>Know the Tools Requisition Procedure and Record</i>	3.1	Explain how to fill out the tool requisition form.		
	3.2	State the procedure for tool requisition.		
	3.3	Request tools for the milling operation		
	3.4	Return tools after use		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

Unit 011:**Introduction to Shaping and Slotting Machine**

Unit Reference Number: ENG/MCH/011/L3

NSQ Level: 3

Credit Value: 3

Guided Learning Hours: 30 hours

Unit Purpose: This unit is designed to provide learners with the knowledge and skills required for the basic operation of the shaping and slotting machine.

Unit assessment requirements/evidence requirements.

Assessment must take place in a genuine workplace environment where learning and human development training occur. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answers (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

(This depends on the Trade Areas to be assessed)

Unit 011: Introduction to shaping and slotting machines

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA (PC)	Evidence Type	Evidence Ref. Page Number
The learner will:		The learner can:		
LO 1: <i>Know the Shaping Machine</i>	1.1	Describe a shaping machine		
	1.2	Identify shaping machine parts.		
	1.3	Describe the use of the shaping machine.		
	1.4	Describe the working principle of a shaping machine.		
	1.5	Identify the shaping machine cutting tools.		
LO 2: <i>Know the Slotting Machine</i>	2.1	Describe a slotting machine		
	2.2	Identify slotting machine parts.		
	2.3	Describe the use of a slotting machine.		
	2.4	Describe the working principle of a slotting machine.		
	2.5	Identify slotting machine cutting tools.		
LO 3: <i>Know how to Perform Prestart Checks on the Shaping and Slotting Machine.</i>	3.1	Perform necessary checks to prevent damage to the machine.		
	3.2	Perform necessary checks to prevent accidents.		
	3.3	Identify and operate the Emergency stop button.		
LO 4: <i>Know the Similarities between Shaping and Slotting Machines</i>	4.1	Describe the differences between Shaping and Slotting machines.		
	4.2	Describe the similarities between Shaping and slotting machines.		
	4.3	Determine when to use either shaping or slotting.		

Learner's Signature:	Date
Assessor's Signature:	Date:
IQA Signature (if sampled)	Date:
EQA Signature (if sampled)	Date:

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