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MINISTRY OF HEALTH-ETHIOPIA

Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

MEDICAL LABORATORY TECHNIQUES

NTQF Level III-IV

Ministry of Labor and Skills
November 2021

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market. The Ethiopian Occupational Standards (EOS) is a core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without considering TVET delivery**.**

This document details the mandatory format, sequencing, wording and layout for the Ethiopian Occupational Standard comprised of Units of Competence.

A Unit of Competence describes a distinct work activity that would normally undertake by one person.

A unit of Competence is documented in a standard format that comprises:

- Occupational title, NTQF level
- Unit code
- Unit title
- Unit descriptor
- Unit of Competence
- Elements and performance criteria
- Variables and Range statement
- Evidence guide

The ensuing sections of this EOS document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- Chart with an overview of all Units of Competence for the respective level (Unit of Competence Chart) including the Unit Codes and the Unit of Competence titles
- Content of each Unit of Competence (Unit of Competence Standard)

UNIT OF COMPETENCE CHART

Occupational Standard: Medical Laboratory Techniques Level III

Occupational Code: HLT MLT

NTQF Level III

HLT MLT3 01 1121 Provide Motivated Competent and Compassionate service	HLT MLT3 02 1121 Apply Infection Prevention Techniques and Workplace OHS	HLT MLT3 03 1121 Provide First Aid and Emergency Response
HLT MLT3 04 1121 Collect and Process Medical Samples	HLT MLT3 05 1121 Perform equipment handling and maintenance	HLT MLT3 06 1121 Prepare Laboratory Solutions
HLT MLT3 07 1121 Perform Parasitological Examination	HLT MLT3 08 1121 Perform Urine and Body Fluid analysis	HLT MLT3 09 1121 Apply Computer and Mobile Health Technology
HLT MLT3 10 1121 Apply basic health statistics and health survey	HLT MLT3 11 1121 Perform Community Mobilization and Provide Health Education	HLT MLT3 12 1121 Apply 5S Procedures

NTQF Level IV

HLT MLT4 01 1121 Use Info-technology Devices in the Workplace	HLT MLT4 02 1121 Perform Microbiological Tests	HLT MLT4 03 1121 Perform Hematological Tests

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Provide Motivated Competent and Compassionate service**
Unit Code	HLT MLT3 01 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to effectively perform professional duties and responsibilities with motivated, competent, compassionate, respectful and caring manner by applying basic principles of professional, ethical and legal aspects of the profession

Element	Performance Criteria
1. Apply professionalism and ethical practice principles	1.1. Ethical principles and issues of the profession are identified and executed 1.2. Professional code of conducts are identifies and executed 1.3. ***Professional values*** are recognized and demonstrated 1.4. Adherence to ethical principles of the profession is maintained and evaluated 1.5. Professional practice are maintained according to applicable standards
2. Apply humanistic care to clients	2.1. Patients concern are understood and implemented 2.2. Patient and ***clients*** feelings and emotions are considered 2.3. Patients ***innate needs*** are addressed and communicated
3. Demonstrate effective health care communication	3.1. Positive, respectful and collaborative working relationship (rapport)is established 3.2. Compassion concern for the patient should be recognized, anticipated and expressed. 3.3. Proper information is gathered and effectively elicited in order to facilitate accurate diagnosis and management 3.4. Appropriate non-verbal communication is used 3.5. Patient concern is actively listened and responded to in respectful manner 3.6. Clients are effectively informed, educated and counseled 3.7. ***Effective interaction*** with other people working within the health system is established 3.8. ***Therapeutic instructions*** are provided compassionately 3.9. ***Non-violent communication*** techniques are used and implemented
4. Provide respectful care for clients	4.1. Health care practitioners are listened to and patient and family perspectives and choices honored 4.2. Patient and family knowledge, values, beliefs and cultural backgrounds are incorporated into the planning and delivery of care 4.3. Complete and unbiased information are communicated and shared with patients and families by the practitioner in in an affirming and

	useful manner 4.4. Patients and families are made to receive timely, complete, and accurate information in order to effectively participate in care and decision-making. 4.5. Patients and families are encouraged and supported in participating in care and decision-making at the level of their choice 4.6. Patients, families, health care practitioners, and hospital leaders have been collaborated in policy and program development, implementation, and evaluation; in health care facility design; and professional education and the delivery of care. 4.7. ***Patient's rights*** to access care transfer and continuity of care are respected.
5. Perform with legal and ethical framework through responsibility and accountability	5.1. Legislation and common laws relevant to work role are understood 5.2. Policies and procedures are respected and practiced 5.3. ***Confidentiality of individual's*** record is ensured. 5.4. Disclosure of patient's information to another person is prevented without patient's consent. 5.5. Ethical issues and ethical dilemma in the workplace is recognized 5.6. Patients who are not able to communicate in case of emergency or other conditions are handled. 5.7. Patient-specific data are released to only authorized users. 5.8. Ethical standards related to patient privacy rights are publicized. 5.9. Assessments are conducted and solutions on privacy issues/problems recommended. 5.10. Training programs for health care providers and other staff on privacy and confidentiality of patient information are conducted 5.11. Unethical conduct is recognized and reported

Variable	**Range**
Professional values	May include, but not limited to: • Responsiveness, • Compassion, • Trustworthiness, • Integrity, • Honesty etc.
Clients	• Child and families • Children and young people • Individuals living in the community • People seeking advice and assistance • Patients

	• Patient families • Women childbearing age groups
Innate needs	May include, but not limited to: • Need to be respected • Need to be treated • Affection • Care
Effective interaction	May include, but not limited to: • Teamwork, • Respect, • Politeness
Therapeutic instructions	May include, but not limited to: • Instructions respecting patients dignity • Instructions consulting patients feelings and demands • Cooperative instructions
Non-violent communication	May include, but not limited to: • Communication that empowers individuals to achieve greater empathy for others by developing their own sense of their feelings and needs • Communication used to heal: ➢ emotional wounds, ➢ develop emotional intelligence, ➢ resolve conflicts, and ➢ create win-win solutions
Patient privacy rights	May include, but not limited to: • Respect and Dignity, confidentiality, access to own medical record, care, transfer, and continuity of care, information, consent, • Sanctity, dignity, culture, values, beliefs and rights of patients . • Access to services • Confidentiality • Dignity • Informed choice • Privacy • Right to express ideas and opinions • To lodge a compliant
Confidentiality of client information	May be ensured by: • Adherence to Privacy Act /or law • Information disclosed to an appropriate person consistent with the responsibility of this position • Legal and ethical requirements

	• Secure location for written records • Privacy of work area
Tools	May include, but not limited to: • Patient's Right Regulations • Ethiopian health law regarding patient rights • Information release policies and guidelines • Proclamations on health issues • Regional/local rules and regulations • Medico- legal issues

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills in: • Understand patients concern and serve humanistic care to clients • Application of effective health care communication • Respecting for and facilitation of patients' and families' participation in decision and care protection of individual medical records from unauthorized access and disclosure • Marinating integrity with professionalism
Required Knowledge and Attitude	Must demonstrate knowledge of: • Compassionate , respectful and caring health workforce approached and implementation strategies • Organization's policy and procedures for ethical and professional practice • Difference between ethical and legal problems • Importance of ethics in practice • OHS requirements • Relevant standards and codes of practice in the profession • Adherence of ethical principles • Relevant legislation and jurisdictions • Patient dignity and respect • Patient involvement Decision making • Professional roles and responsibility • What schedules and policies exist for routine authorization • How to deal appropriately with individual users • Legislative and regulatory processes • Legal terminology • Confidentiality, privacy, , procedures, and monitoring. • Release of information policies and procedures • Professional and practice-related ethical issues
Required Skills	Must demonstrates skills in:

	• Demonstrate and adherence to Compassionate, caring and respectful patient care and treatments • Effective health care communication • Team work • Follow organization policies, protocols and procedures • Ethical requirements (professional ethics)
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Unit Title	Apply Infection Prevention Techniques and Workplace OHS
Unit Code	HLT MLT3 02 1121
Unit Descriptor	This unit covers knowledge, skills and attitude required for workers to comply with infection control policies and procedures. All procedures must be carried out in accordance with current infection control guidelines to ensure the workplace is safe and without risks to the health of employees, clients and/or visitors.

Element	Performance Criteria
1. Apply infection prevention techniques	1.1. Basic components of disease transmission are identified 1.2. Essential elements of ***infection prevention*** are implemented 1.3. Universal precaution and standard precaution are applied 1.4. The application of ***additional precautions*** is demonstrated when ***standard precautions*** alone may not be sufficient to prevent transmission of infection 1.5. ***Contamination*** of materials, equipment and instruments is ***minimized*** by aerosols and splatter 1.6. Instrument processing is performed 1.7. Infectious/hazardous waste materials are safely disposed according to waste management policies and procedures (3S'si.e sort, shine and set in order) 1.8. Personal protective barriers are prepared and used 1.9. Proper hand washing techniques are applied
2. Establish and maintain participative arrangements	2.1 Appropriate ***participative processes*** are established and maintained in accordance with OHS legislation, regulations and industry standards 2.2 Issues raised through participation and consultation are dealt with promptly and effectively 2.3 Information to employees about the outcomes of participation and consultation is provided in a manner accessible to employees. 2.4 Systems are established and monitored for keeping ***OHS records*** to meet regulatory requirements, allow identification of patterns of hazardous incidents, occupational injuries and diseases within the area of managerial responsibility.
3. Assess and control risks and hazards	3.1. ***Organizational procedures*** for ***hazard*** identification, assessment and control of risks are developed. 3.2. Identification of all hazards is made at the planning, design and evaluation stages of any changes in the workplace

	3.3. Procedures for selection and implementation of risk control measures are developed and maintained in accordance with the hierarchy of control. 3.4. Inadequacies in existing risk control measures are identified in accordance with the hierarchy of control and provide promptly resources enabling implementation of new measures. 3.5. Protocols are followed for care following exposure to blood or other body fluids as required
4. Limit contamination	4.1 Clean and contaminated zones are demarcated and maintained in all aspects of health care work 4.2 Records, materials and medicaments are confined to a well-designated clean zone 4.3 Contaminated instruments and equipment are confined to a well-designated contaminated zone
5. Clean environmental surfaces	5.1. Personal protective clothing and equipment are worn during cleaning procedures 5.2. All dust, dirt and physical debris are removed from work surfaces 5.3. All work surfaces are cleaned with a neutral detergent and warm water solution before and after each session or when visibly soiled 5.4. All work surfaces are dried before and after use 5.5. Surface covers are replaced where applicable 5.6. Cleaning equipment are maintained and stored

Variable	**Range**
Infection prevention	May include, but not limited to: • Hand washing • Personal protective barriers • Proper handling of sharp items • Proper processing of instruments and materials • Environmental cleanliness • Proper infectious-waste disposal • Aseptic technique
Additional precautions	May include, but not limited to: • Special ventilation requirements • Additional use of PPE • Dedicated equipment (e.g. to each client or as appropriate to work function) • Use of a special facility

Standard precautions	May include, but not limited to: • Aseptic technique • Personal hygiene practices especially washing and drying hands (e.g. before and after client contact) • Use of PPE • Techniques to limit contamination • Surface cleaning and management of blood and body fluid spills • Safe handling of sharps • Safe disposal of sharps and other clinical waste • Appropriate reprocessing and storage of reusable instruments
Minimizing contamination	May include, but is not limited to: • Protecting materials, equipment and instruments from contamination until required for use • Ensuring instruments used for invasive procedures are sterile at time of use • Cleaning all environmental surfaces
Participative Processes	May include, but not limited to: • Regular information sessions (using clear and understandable language) on existing or new OHS issues • Formal and informal OHS meetings • Meetings called by OHS representatives • Health and safety committees • Other committees such as consultative planning and purchasing • Other means and processes for raising requests and concerns as well as contributing suggestions and reports to management • Documented issue resolution processes • Easy access to relevant written workplace information
OHS records	May include, but not limited to: • Audit and inspection reports • Agendas and minutes of meetings of OHS Committees, work group and management meetings • Training records • Manufacturer's or supplier's information • Hazardous substances registers • Plant and equipment maintenance and testing reports • Workers compensation and rehabilitation records • First aid/medical records • Workplace environmental monitoring records
Organizational Procedures	May include, but not limited to: • Hazard management policies and procedures (these may be integrated with quality, care or other documents or be separated as

	OHS policies and procedures). • Communication, consultation and issue resolution procedures • Human resources management procedures such as grievance procedures, induction programs, team meetings, management of performance levels • Job procedures and work instructions • Post incident/injury management such as first aid, critical incident debriefing, compensation and return to work • Other related procedures including waste management, security
Hazard	Is defined as: • something with the potential to: ➢ cause injury or disease to people, ➢ damage property ➢ Disrupt productivity.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skill on: • Communication and persuasion knowledge and skill on infection prevention • Developing, implementing and maintaining organizational OHS policies and procedures • Managing and controlling risks and hazards • Listening and responding quickly • Techniques of infection prevention
Required Knowledge and Attitude	Must demonstrate knowledge on: • Techniques of infection prevention • Chain of disease transmission • Universal precaution and standard precaution • Understanding and interpreting relevant laws and guidelines that affect the operation • Working with risk assessment and/or other technical specialists in a team environment • Risk control strategies • Collecting and analyzing data from the workplace • Problem Solving
Required Skills	Must demonstrate skills to: • Apply techniques of infection prevention • Apply proper hand washing techniques • Apply proper instrument processing techniques • Identify potential risks and hazards and manage timely • Communicate and persuade employees, officials and

	stakeholders • Listen and take appropriate prompt measure • Plan, organize, implement and monitor work place OHS Activities • Manage, analyze and interpret data
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Provide First Aid and Emergency Response**
Unit Code	HLT MLT3 03 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to recognize and respond to life threatening emergencies using basic life support, provide first aid response, management of casualty(s), the incident and other first aiders, until the arrival of medical or other assistance.

Element	Performance Criteria
1. Assess and identify client's condition.	1.1. Basic principles of first aid are addressed 1.2. ***Hazards*** in the situation that may pose a risk of injury or illness to self and others are identified, assessed and minimized 1.3. Immediate ***risk*** to self and casualty's health and safety is minimized by controlling any hazard in accordance with work health and safety requirements 1.4. Emergency situation is recognized and *hazards* to health and safety of self and others are identified 1.5. ***Vital signs*** and state of consciousness are checked and monitored in accordance with guidelines. 1.6. ***History of the event*** is obtained. 1.7. Safety equipment and aids required for emergencies are selected, used, maintained and stored in good order 1.8. Options for action in cases of emergency are identified and evaluated 1.9. Organizational emergency procedures and policies are correctly implemented 1.10. Occupational health and safety procedures and safe working practices are applied
2. Provide first aid service	2.1. Communication style to match the casualty's level of consciousness is adopted 2.2. Available ***resources and equipment*** are used to make the casualty as comfortable as possible 2.3. ***Basic ABCDE rules*** of life are applied. 2.4. The casualty is responded to in a culturally aware, sensitive and respectful manner 2.5. Relevant first aid procedures are determined and explained to provide comfort 2.6. Consent is sought from casualty prior to applying first aid management 2.7. F*irst aid management is provided* in accordance with ***established first aid principles and procedures*** 2.8. Clinical first aid equipment are correctly operated as required for ***client management*** according to manufacturer/supplier's instructions

	and procedures 2.9. Client care techniques are implemented in accordance with procedures and techniques applicable to standards. 2.10. Safe manual handling techniques are used consistently 2.11. ***Casualty's condition*** is monitored and responded in accordance with established first aid principles and procedures 2.12. Casualty management is finalized according to casualty's needs and first aid principles
3. Prepare, evaluate and act in an emergency	3.1. Options for action in cases of emergency and group control strategies for evacuation are identified 3.2. Occupational health and safety procedures and policies are correctly implemented 3.3. Clients and other individuals are removed from danger. 3.4. Assessed and evaluated potential hazards are reported and documented
4.Communicate details of the incident	4.1. First aid assistance from others is sought in a timely manner and as appropriate 4.2. Ambulance support and/or appropriate medical assistance are/is requested according to circumstances 4.3. Observation of casualty's condition and management activities accurately is conveyed to ambulance services/relieving personnel 4.4. A communication style is adopted to match the casualty's level of consciousness 4.5. Details of casualty's physical condition, changes in condition, management and responses are accurately assessed and reported to management in line with established procedures 4.6. Confidentiality of records and information is maintained in line with privacy principles and statutory and/or organization policies
5.Refer client requiring further care	5.1. ***Relevant client history*** is documented according to standard guidelines. 5.2. ***Documentation*** for referral procedures is ensured. 5.3. Appropriate information to individuals involved in referral is conveyed to facilitate understanding and optimal care. 5.4. Maintain client care until responsibility is taken over by staff of the receiving health institutions during referral. 5.5. Client confidentiality is maintained at all times and levels.
6. Evaluate own performance	6.1. Feedback is sought from ***appropriate clinical expert*** 6.2. The possible psychological impacts on rescuers involved in critical incidents is recognized 6.3. Participation is done in debriefing/evaluation to improve future response and address individual needs

Variable	Range
Hazards	May include, but not limited to: • Source or situation with the potential for harm in terms of human injury or ill health, damage to property, the environment, or a combination of these. • Relevant hazards may be classified under the headings: ➢ biological hazards ➢ chemical hazards ➢ physical hazards
Risk	May include, but not limited to: • Environmental risks • Exposure to blood and other body substances • Risks associated with the proximity of other workers and bystanders • Risks from body position • Risks from equipment, machinery and substances • Risks from vehicles • Risks from first aid equipment • Risk of further injury to the casualty
Vital signs	May include, but not limited to: • Blood pressure , pulse rate, respiratory rate and temperature, RBS
History of the event	Includes present history and may be elicited from: • Client • Bystander • Primary care givers • Medical (health) personnel • Evidence at the sight
Resources and equipment	May include, but not limited to: • AED (if available) • Bronchodilator and spacer • First aid kit • Resuscitation bag and mask
Basic ABCDE rules	• Air way, breathing, circulation, Disability and Exposure
Establishing first aid principles and procedures	Must include*:* • Airway management • Cardiopulmonary Resuscitation (CPR) • Control severe bleeding • Provide assistance with self-administered medications, such as insulin, bronchodilator • Care of the unconscious person such as: hypoglycemia • Prevent hypothermia

Client management	Will need to take into account: • Location and nature of incident • Environmental conditions

Casualty's condition	Must include, but is not limited to:
	• Severe bleeding
	• Unresponsive
	• Unstable vital sign
	• Airway obstruction
	  • Severe allergic reaction
	  • Choking
	• Abdominal injuries
	• Burns – thermal, chemical, inhalational, electrical
	• Cardiac arrest
	• Chest pain
	• Drowning
	• Envenomation – snake, spider, insect and marine bites and stings
	• Environmental impact such as hypothermia, hyperthermia, dehydration, heat stroke
	• Injuries: cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; chest injuries, minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations, fractures
	• Medical conditions, including
	  ➢ cardiac emergencies,
	  ➢ epilepsy,
	  ➢ diabetes,
	  ➢ asthma,
	  ➢ shock,
	  ➢ stroke and
	  ➢ other respiratory conditions
	• Poisoning and toxic substances (including chemical contamination)
	• Substance misuse – common drugs and alcohol, including illicit drugs

Relevant client history	Includes: • Pre-existing conditions • Allergies • Current medication or treatment etc…
Documentation	May include, but not limited to: • Incident reports • Referral reports and Case management records

Appropriate clinical expert	May include, but not limited to: • Ambulance officer/paramedic • Appropriately qualified health care professional

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Explain essential knowledge across the range outlined to confirm physical health status • Perform initial check up, provide basic care and meet referral decision • Apply OHS standard requirements and codes of practice. • Demonstrate first aid knowledge and skills in line with guidelines • Perform first aid procedures • practice first aid skills using prepared and improvised materials • Implement hazard identification, assessment and control. • Deal with contingencies • Communicate with others
Required Knowledge and Attitude	Demonstrate knowledge of: • Awareness of stress management techniques and available support • Basic anatomy and physiology related to first aid and emergency response • Absence of: ➢ normal breathing ➢ response/consciousness: ✓ choking/airway obstruction ✓ severe bleeding ✓ shock ✓ chain of survival ✓ duty of care requirements • Procedures and equipment used for basic life support, as specified within authorized limits • First aid techniques • Evaluation of client psychology • Use of safe working practices. • Emergency network • Evacuation procedures. • OHS standard requirements and codes of practice • Organizational and legal policies and procedures in the event of

	an accident/incident. • Local call out procedures to access emergency services personnel. • Practical first aid skills using prepared and improvised materials. • Hazard identification, assessment and control of emergencies • First aid procedures for: ➢ airway management ➢ bleeding control ➢ casualty that is unresponsive/unconscious and not breathing normally ➢ chest pain ➢ infection control as it relates to standard precautions ➢ respiratory distress, including asthma ➢ severe allergic reaction ➢ shock • How to access emergency response support services/personnel • Need to be culturally aware, sensitive and respectful • Own skills and limitations • Privacy and confidentiality requirements • Relevant workplace hazards • Understanding of the use of an Automated External Defibrillator (AED), including when to use and when not to First aid management, based on a risk assessment relevant to the workplace or community setting of: Social / legal issues including: ➢ duty of care ➢ confidentiality ➢ importance of debriefing ➢ need to be culturally aware, sensitive and respectful ➢ own skills and limitations Understanding of: ➢ basic work health and safety requirements in the provision of first aid ➢ basic principles and concepts underlying the practice of first aid ➢ chain of survival ➢ infection control principles and procedures, including use of standard precautions ➢ priorities of management in first aid when dealing with life threatening conditions ➢ procedures for dealing with major and minor injury and

	illness • The use of an Automated External Defibrillator (AED), including when to use and when not to use • The causes of asphyxia due to body position
Required Skills	Demonstrate skills to: • Communicate effectively and assertively in an incident • Assess vital signs and response of casualty • Make initial client check up and use of safe working practices • Apply first aid principles • Provide first aid service • Implement basic client care procedures • Refer client requiring further care • Perform emergency network. • Handle evacuation procedures. • Ensure legal responsibilities and Duty of Care. • Use communication skills and equipments • Apply local call out procedures to access emergency services personnel. • Practice first aid skills using prepared and improvised materials. • Undertake hazard identification, assessment and control. • Call an ambulance and/or medical assistance according to relevant circumstances and report casualty(s) condition • Demonstrate management of: ➢ Anaphylaxis using adrenalin ➢ Airway opening techniques ➢ Choking management ➢ Avoiding asphyxia due to body position ➢ Bronchospasm using bronchodilator and spacer device ➢ Cardiac arrest using single or two rescuer procedure, including the demonstration of a seamless changeover between operators ➢ External hemorrhage ➢ Fractures, sprains and strains using arm slings, roller bandages and other appropriate immobilization techniques ➢ Unconscious casualty including using a recovery position • Demonstrate: ➢ ability to call an ambulance ➢ consideration of the welfare of the casualty ➢ safe manual handling ➢ site management to prevent further injury ➢ understanding of causes contributing to asphyxia due to

	body position • Demonstrate correct procedures for airway opening • Demonstrate proper management of choking • Demonstrate correct procedures for performing CPR using a manikin, including standard precautions • Demonstrate infection control, including use of standard precautions • Evaluate own response and identify appropriate improvements where required • Make prompt and appropriate decisions relating to managing an incident in the workplace • Plan an appropriate first aid response in line with established first aid principles, • Report details of emergency incident and first aid provided • Provide assistance with self-medication as per subject's own • Call an ambulance and/or medical assistance, according to circumstances and report casualty's condition • Demonstrate first aid for mass casualty management principles: ➢ assess and minimize danger ➢ check for response ➢ maintain casualty's airway, breathing and circulation • Demonstrate: ➢ consideration of the welfare of the casualty ➢ control of external bleeding ➢ correct procedures for CPR on a resuscitation manikin ➢ implementation of standard precautions ➢ safe manual handling of casualty • Identify and minimize hazards to health and safety of self and others in the immediate workplace or community environment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Collect and Process Medical Samples**
Unit Code	HLT_MLT3 04 1121
Unit Descriptor	This unit covers knowledge, skills and attitude required to apply concepts of physiology and anatomy of human, collect, handle, and transport and prepare samples for testing at work site or field using specified equipment and standard or routine procedures in a way that ensures the integrity of subsequent samples.

Element	Performance Criteria
1. Apply concept of physiology and anatomy	1.1. Concept of physiology and anatomy of human are identified, 1.2. Type and nature of samples are identified 1.3. Time of samples collection and collection sites are identified
2. Prepare to collect samples	2.1. The purpose, priority and scope of the sampling request is Identified 2.2. Site hazards are identified and enterprise safety procedures reviewed 2.3. Type of sample, site of collection , time of collection and how to collect sample are confirmed 2.4. All necessary materials are availed and its stock is monitored. 2.5. Pre-use and cleanliness checks of all items are ensured 2.6. All items are checked against given inventory and packed to ensure safe transport. 2.7. Handling sequence and any permit requirements are confirmed 2.8. Vehicle and communication devices are checked in working order 2.9. Required transport containers and materials are checked in the vehicle.
3. Collect and handle sample	3.1. Sample collection area are identified and organized. 3.2. Security devices, such as locks and covers are removed as required. 3.3. Advice is sought if the required samples cannot be collected or if procedures require modification. 3.4. The required ***sampling tools equipment*** are selected and used in accordance with given procedures

	3.5. Sampling procedures are closely followedto obtain required samples and maintain their integrity. 3.6. Labeling information is recordedin accordance with enterprise/legal traceability requirements. 3.7. Desired type and quantity of sample are collected based on standard operating procedure 3.8. Sample appearance, environmental conditions and any other factors that may impact on ***sample integrity*** are recorded, when required 3.9. Sample integrity and confidentiality of information are maintained at all times 3.10. Samples/Items are delivered to each laboratory department in accordance with enterprise procedures
4. Transport and handle sample	4.1. Confirm the number and nature of samples/items to be handled on arrival 4.2. Ensure samples have been matched to request format 4.3. Requirements are applied to the transport of samples and/or equipment 4.4. Be alert laboratory personnel to any special needs are identified on documents accompanying the samples/ items 4.5. Required documentation are completed at handling point 4.6. Samples are packed in the specified transport containers and under the required conditions/on triple package / 4.7. Sample integrity is maintained at all times 4.8. Samples are delivered to reception point in accordance with enterprise procedures 4.9. Confidentiality of information is maintained 4.10. Vehicle is maintained according to enterprise requirements 4.11. State of transport containers is maintained to ensure that are fit for purpose 4.12. Enterprise procedures are followed for the cleaning/decontamination of equipment and vehicle as necessary 4.13. Samples to the required collection point are deliveredand all documentation completed to ensure traceability.
5. Receive and log sample	5.1. Confirm the number and nature of ***samples/items*** to be received 5.2. Samples are checked and matched with request forms before they are accepted. 5.3. Required documentation are completed at handling point

	5.4. Date and time of arrival of samples at enterprise are record 5.5. Samples are entered into the Laboratory Information Management System (LIMS)./log sheet 5.6. Required document tracking mechanisms are applied. 5.7. 'Urgent' test requests are processedaccording to enterprise requirements. 5.8. Security and traceability of all information, laboratory data and records are ensured 5.9. Pre-use and cleanliness checks of all items are conductedto ensure they are fit for purpose.
6. Distribute samples	6.1. Samples requiring similar testing requirements are grouped 6.2. Samples are distributed to each laboratory department maintaining sample integrity 6.3. Request forms for data entry or filing in are distributed accordance with enterprise procedures. 6.4. Check that samples and relevant request forms have been received by laboratory personnel
7. Prepare sample for testing.	7.1. Physical separation of the samples is performed, as required 7.2. Chemical separation of the samples is performed, as required 7.3. Sub-samples and back-up sub-samples that are representative of the source are prepared 7.4. All sub-samples are labeled to ensure traceability and stored in accordance with SOPs. 7.5. Sub-samples are distributed to defined work stations maintaining sample integrity and traceability requirements. 7.6. Sample conditions are monitored and controlledbefore, during and after processing. 7.7. Defined preparation and safety procedures are followedto limit hazard or contamination to samples, self, work area and environment.
8. Maintain safe work environment	8.1. Established work practices and PPE are used to ensure personal safety and that of others. 8.2. Environmental impacts of sampling and generation of waste are minimized. 8.3. All equipment, containers, work area and vehicles are cleaned according to enterprise procedures. 8.4. Hazards due to laboratory equipment are avoided before storage.

	8.5. The safe collection of all hazardous for waste disposal is ensured 8.6. Splashes and spillages are cleaned up immediately using appropriate techniques and precautions. 8.7. All laboratory wastes are segregated in accordance with safety policy in accordance with waste disposal 8.8. All wastes are disposed of in accordance with enterprise procedures 8.9. Appropriate protective equipment is used to ensure personal safety when sampling, processing, transferring or disposing of samples. 8.10. All accidents and spillages are reported to supervisor.

Variable	Range
Sampling tools and equipment	May include, but not limited to: • Sample collection containers • PPE such as gloves, gown, mask and safety glasses • Stationary materials • Reagents • Aseptic and disinfectant solutions • Laboratory glass wares and measuring equipment • Laboratory information management system, databases, record and filling system • Sampling frames, sampling tubes, dip tubes, spears, flexible bladders and syringes • Sample bottles or containers, plastic containers and disposable buckets • Pumps and stainless steel bailers • Sterile containers, pipettes and disposable spoons
Samples integrity	May include, but not limited to: • Use of appropriate containers and lids (e.g. Glass, plastic, amber and opaque) • Sealing of sample containers • Purging of sample lines and bores • Decontamination of sampling tools between collection of consecutive samples • Use of appropriate preservatives (e.g. Sodium azide, toluene or antibiotics) • Wrapping container in foil to exclude light • Temperature control, which may involve prevention of direct contact between the sample and coolant • Use of appropriate equipment boxes (insulated, shockproof and waterproof) • Restraint of containers to prevent movement • Checking sample viability during transport while avoiding

	unnecessary handling • Transfer of sterile sample into sterile container • Monitoring of storage conditions • Enterprise/legal traceability through appropriate sample • Labeling and records
Samples/items received	Samples received May include, but not limited to: • Biological specimens such as blood, urine, stool, sputum, body fluids
Basic principles of sampling	Basic principles of sampling include: • Representative samples • Preservation of integrity of samples • Maintaining identification of samples relative to their source, enterprise and legal traceability • Cost-effectiveness of sampling • Consistency of sampling procedures • Sampling principles, including random, systematic and stratified sampling
OHS and environmental management requirements	May include, but not limited to: • All operations must comply with enterprise OHS and environmental management requirements which may be imposed through state/regional or federal legislation - these requirements must not be compromised at any time • All operations assume the potentially hazardous nature of samples and require standard precautions to be applied • Where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State/regional Departments of Health or federal legislation

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Correctly follow sampling procedures and plans when collecting samples • Collect samples efficiently, safely and with minimal environmental impact • Maintain the integrity and security of samples following the traceability requirements • Recognize limitations and seek timely advice • Follow required policies and procedures to maintain the integrity of collected samples or equipment during transport • Deal with customers effectively and courteously • Maintain confidentiality and report problems, accidents and incidents in accordance with procedures. • Apply knowledge of the relationship between sample preparation requirements and associated tests

	• Deal with customers politely and efficiently • Recognize and deal with problems according to enterprise procedures • Maintain sample integrity and traceability by closely adhering to procedures. • Collect the specified quantity of sample to enable all processing and testing to occur and back-up samples to be stored • Obtain a sample that is representative of the bulk specimen • Label samples and sub-samples to satisfy enterprise/legal traceability requirements • Identify atypical materials and samples and take appropriate action • Complete sampling records using enterprise procedures • Follow safety regulations and enterprise ohs procedures during sampling, transport and storage • Follow relevant legislative requirements for the disposal of waste and the preservation of the environment.
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Key terminology and concepts, such as sample, contamination, traceability, integrity and chain of custody • Concepts of methodology • The international system of units (SI) • Purpose for which the samples have been collected • The function of key sampling equipment/materials and principles of operation • Hazards, risks and enterprise safety procedures associated with routine sampling undertaken • Enterprise procedures dealing with sampling • Procedures for the containment and cleanup of spillages and breakages • Handling, transport and storage of dangerous goods • The relationship between effective communication with clients and customers and enterprise business • The need for appropriate and timely transport • Effect of changes in environmental conditions, vibration and shock on samples • Efficient waste containment and disposal practices • Maintenance requirements of equipment used in the processes of handling and transporting samples • Enterprise procedures for responding to emergencies • Contact details for key personnel. • Enterprise procedures for the receipt, documentation, distribution and storage of samples • Potentially hazardous and unstable nature of samples • requirement of specified sample types for specific tests • Importance of maintaining effective customer relations

	• Sample storage and transport requirements • Relevant health, safety and environment requirement • Principles of representative samples • Principles and procedures for random, systematic and stratified sampling, consistency of sampling procedures • Preservation of the integrity of samples • Maintaining identification of samples relative to their source • Cost effectiveness of sampling • Characteristics of product/material to be sampled and likely contaminants • Links between quality control, quality assurance, quality management systems and sampling procedures • Links between correct OHS procedures and personal and environmental safety particularly at high risk sites
Underpinning Skills	Demonstrate skills in: • Collecting a variety of samples at a range of sites closely following sampling procedures • Maintaining the integrity and security of samples • Liaising with others to access sites and conduct sampling efficiently • Recognizing own limitations then seeking timely advice • Preparing a vehicle for the required journey • Using communication devices so contact is possible between the courier, reception centre, and routine pickup locations • Communicating effectively and courteously with individuals, customers, clients and reception staff • Recording details of item exchange in relevant sections of chain of custody forms, as required • Maintaining the integrity of collected samples or equipment during transport • Containing and cleaning up spillage or breakages • Using appropriate techniques and equipment to safely dispose of waste materials • Maintaining confidentiality in all aspects of work • Reporting of problems, accidents or incidents in accordance with enterprise procedures • Receipt and logging in of samples • Checking of samples for history and acceptable transport conditions • Preparing and sub-sampling of samples • Labeling samples accurately and completely • Using standard precautions when dealing with potentially hazardous materials • Applying knowledge of the relationship between specific sample preparation and associated tests • Clarifying specific client requirements with appropriate personnel promptly

	• Labeling and storing samples in a way which maintains sample integrity and traceability • Maintaining equipment and the workspace • Collecting representative samples in accordance with a sampling plan • Identifying atypical materials and samples and taking appropriate action • Completing sampling records • Following requirements for the disposal of waste and the preservation of the environment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	Perform Equipment handling and maintenance
Unit Code	HLT MLT3 05 1121
Unit Descriptor	This unit covers knowledge, skills and attitude required to equipment handling and maintenance procedure. Identifying different parts of equipments, implementing equipment operation, performing calibration and maintenance using standard calibration procedures. These procedures specify all associated reference standards, materials, equipment and methods to be used and the required parameters or quantities and ranges to be tested, including the criteria for rejection or approval.

Element	Performance Criteria
1 Identify different parts of laboratory equipment	1.1. Parts of ***laboratory equipments*** are described 1.2. Function of laboratory equipments are described 1.3. Appropriate use of laboratory equipments is ensured. 1.4. All new instructions or modifications to methods are described to ensure repeatability of test.
2 Perform equipment Operation and Handling	2.1. Environmental conditions are monitored to ensure proper function of equipment according to manufacturer specification. 2.2. The appropriate PPE are used during equipment operation 2.3. Principle of each equipment is identified. 2.4. Equipments are properly operated according to the manufacturer recommendation. 2.5. Safety precaution are considered during equipment operation and handling
3 Perform equipment calibration	3.1. All measuring equipment are confirmed to meet the laboratory's specification requirements and complied fully with the calibration procedure 3.2. The authorized ***calibration procedures*** are selected in accordance with enterprise procedures 3.3. Specified reference standards and associated equipment are assemble and set up prior to testing 3.4. Performance of reference standards and measuring equipment is verified prior to use and adjusted or calibrated, as necessary 1 2

	3 3.1. 3.2. 3.3. 3.4. 3.5. 3.6. Confirm readings are the result of a valid measurement and record data as required (before and after adjustment) 3.7. Device under test is adjusted to bring readings within specification and data recorded (after and after adjustment), if required 3.8. Generated calibration report is analyzed to detect trends or inconsistencies that would significantly affect the accuracy or validity of test results 3.9. The requirements are listed for calibration approval and rejection. 3.10. Internal peer checking of calibration procedure, data and results are arranged for and feedback incorporated. 3.11. Results are compared with those obtained by other laboratories, if applicable. 3.12. Confirm that the calibration procedure is fit for purpose and relevant to the client's needs 3.13. Appropriate advice is sought when interpretation of results is outside authorized scope of approval
4 Perform equipment maintenance	1 2 3 4.1. Preventive maintenance activities are conducted according to manufacture requirement of each equipment. a. 4.2. Troubleshooting is performed for identified errors according to manufacturers recommendation 4.3. Equipment having errors that requires trained biomedical engineers are identified 4.4. Knowledge and practice is applied to verify equipment maintenance by service engineers 4.5. Potential sources of measurement error are identified and minimized

5 Keep records of equipment maintenance and calibration report	5.1. The procedure is reported and presented to appropriate personnel for approval before use 5.2. Prepare and issue a final report on the job/item detailing testing carried out, traceability, statement of compliance and relevant information as required 5.3. Any non-compliance is reported and next course of action verified. 5.4. Calibration labels, equipment stickers, quality control tags and tamper resistant seals are attached, as required in enterprise procedures 5.5. Compliance/non-compliance is documented with requirements of test and/or specifications 5.6. Test equipment/measurement standards and results are stored in accordance with enterprise procedures

Variable	Range
laboratory Equipments	May include, but not limited to: ➢ Balance ➢ Microscope ➢ Micropipette ➢ Centrifuge ➢ Autoclave ➢ Oven ➢ Spectrophotometer ➢ Complete blood cell count analyzer
Calibration procedures	May include, but not limited to: • Balance • Micropipette • Microscope • Autoclave • Oven • Spectrophotometer • Complete blood cell count analyzer
Hazards	May include, but not limited to: • Electric shock • Unbalancing • Vibration • Disturbance or interruption of services • Manual handling of heavy equipment boxes • Sources of electromagnetic radiation • Fluids under pressure • Heat sources, such as ovens, Autoclave
Safety procedures	May include, but not limited to: • Use of PPE, such as hearing • Protection, gloves, safety glasses and coveralls • Ensuring access to service shut-off points • Handling and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer's • Instructions and enterprise procedures and regulations • Regular cleaning of equipment and work areas
Communication	May be with: • Supervisors and managers (laboratory, quality and Customer service) • Peers and other laboratory or relevant technical personnel, clients and stakeholders • External auditors, or accreditation agency, such as Ethiopia National Accreditation Office (ENAO) • Equipment manufacturers and suppliers of spare parts and reference materials
Working environment	Will have a controlled environment but could be a: • Purpose-built designed facility • Mobile facility in the field

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Follow manufacture procedure for operation of equipment for safe and accurate usage • Understand principles of equipment operation • Conduction laboratory equipment maintenance • Understand and maintain equipment installation and handling procedures • Maintain environmental conditions for proper functioning of equipment • Identify the respective trouble shooting activities for errors • Identify the difference b/n assay calibration and instrument calibration • Able to conduct calibration procedures for laboratory equipment • Perform assay calibration using different calibrators • Understand calibration curve • Interpret calibration findings and consider correction factors • Understand the concept of traceability of measurement • Conduct reliable calibration/testing trials to ensure a high degree of reproducibility • Prepare test/calibration documentation that is accurate, concisely and complies with requirements • Recognize problems or deviation in systems and documentation and initiate actions to prevent or minimize them • Recognize and report opportunities for improvements to procedures
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Common terminology, concepts, principles, procedures, and applications about calibration • Requirements of competence of calibration • Equipment specifications and limitations and the implications of equipment substitution • Hierarchy and appropriate selection of reference materials • Handling, transport, storage and operation of reference and working standards • Laboratory environmental control requirements • Calculation procedures to give results in appropriate accuracy, precision and SI units • Methods for statistical analysis (Bias.) • Proper Calibration result interpret • Equipment troubleshooting procedures • Laboratory procedures and legislative requirements for documenting calibration procedures • Laboratory and/or legal traceability requirements • Relevant health, safety and environmental requirements

	• Lines of communication
Underpinning Skills	Demonstrate skills of: • Selecting and applying standard /calibrator calibration procedures • Maintaining close attention to procedures, accuracy and precision of measurement to ensure the integrity of calibration results • Using calibration and correction charts • Calculating to give results in appropriate accuracy, precision and SI units • Preparing calibration documentation that is accurate and complies with requirements • Operating equipment correctly and safely • Conducting reliable calibration trials to ensure a high degree of reproducibility • Explaining complex calibration procedures to clients and clarifying requirements and deviations • Identify daily, weekly and monthly equipment maintenance for laboratory equipment • Applying statistical techniques for analyzing calibration data • Writing calibration procedures using an unambiguous, logical sequence of instructions that meet statutory and regulatory requirements • Preparing all test documentation accurately, concisely and in accordance with requirements • Recognizing opportunities for improvements to procedures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Prepare Laboratory Solutions**
Unit Code	HLT MLT3 06 1121
Unit Descriptor	This unit covers knowledge, skills and attitude required to choose reagent grades, determine desired quantity, perform required dilution, prepare solution, standardize solution, and monitor the quality of solutions and storage condition.

Element	Performance Criteria
1. Prepare a working solutions	1.1. The relevant/appropriate standard procedure is selected for stock solution and/or working ***solutions*** preparation 1.2. Materials and solvent of specified purity are selected 1.3. Data is calculated and recorded 1.4. Appropriate quantities of reagents are measured for solution preparation and record data 1.5. Specified laboratory ***Equipment*** and appropriate grade of glassware are selected and assembled 1.6. The required working solution is mixed or diluted in accordance with procedures 1.7. Solutions are prepared to achieve homogeneous mix of the specified concentration 1.8. Solutions are labeled and stored to maintain identity and stability 1.9. Working solution details are recorded in laboratory register
2. Standardize solution	2.1. Appropriate laboratory equipment are assembled 2.2. Serial dilutions are performed, as required 2.3. The solution to the required specified range and precision is standardized 2.4. The concentration of standardize solutions is determined 2.5. Solutions are labeled and stored to maintain identity and stability re-standardized if require
3. Monitor the quality of laboratory solutions	3.1. The quality of prepared solution is checked before use 3.2. The quality of stored solution is monitored 3.3. Quality monitoring details are recorded

4. Maintain safe work environment	4.1. Appropriate safety precautions are applied for use of laboratory equipment and hazardous chemical materials 4.2. Appropriate laboratory glassware and measuring equipment are used

	4.3. Established safe work practices and PPE are used to ensure personal safety and that of other laboratory personnel 4.4. Spills are cleaned up using appropriate techniques to protect personnel, work area and environment 4.5. Generation of waste and environmental impacts are minimized 4.6. The safe collection of laboratory hazardous waste for subsequent disposal is ensured 4.7. Glassware and equipment are cleaned and stored in accordance with enterprise procedures 4.8. Equipment and reagents are stored as required

Variable	**Range**
Solutions	May include, but not limited to: • Solutions of strong/weak acids and bases • Oxidizing/reducing agents • Stains for cells, buffers and antibodies • Diluents for maintaining isotonicity • Organic solutions and histological fixatives
Equipment	May include, but not limited to: • P^{h}meters • Balances • Water baths • Measuring cylinders, beakers, conical flasks, volumetric • Flasks and pipettes • Filter papers and funnels • Fume cupboards
Concepts of methodology	May include, but not limited to: • That all measurements are estimates • Measurements belong to a population of measurements of the measured parameters • Repeatability • Precision • Accuracy • Significant figures • Sources of error • Uncertainty and Traceability

Typical test solutions	May include, but not limited to: • Solutions required for basic non microscopic tests • Solutions, such as stains • Solutions required for laboratory maintenance and • Disinfection, such as 70% ethanol and hypochlorite
Apparatus and reagents to prepare standard	May include, but not limited to: • Balances

solutions	• Pipettes, burettes, volumetric glassware and weighing • Bottles • Desiccators and filtering media • Ovens and muffle furnaces • Solutions, indicators and primary and secondary standards • Auto titrators, phmeters and other related meters and electrodes for determining equivalence points, top pan and analytical balances • Magnetic stirrers and heaters, and water baths
Monitoring quality of /usability of solutions	May include, but not limited to: • Noting turbidity to exclude absorption of moisture • Noting deposits to exclude microbial contamination or Chemical degradation • Noting crystals to exclude evaporation • Conducting titrations to check concentration • Noting color changes indicating a ph shift with solutions Containing indicators • Checking expiry dates on solution containers • Examining stained samples for correct staining reactions • Performing ph checks • Checking red cell suspensions for haemolysis • Isotonicity for saline
Hazards	May include, but not limited to: • Chemicals, such as strong acids and bases, and stains • Sharps and broken glassware • Burners, hot plates, ovens and furnaces
Safe work practices/safety precautions	May include, but not limited to: • Use of Material Safety Data Sheets (MSDS) • Use of PPE, such as gloves, safety glasses, goggles, faceguards, coveralls and gowns • Use of biohazard containers, laminar flow cabinets and fume hoods • Correct labeling of reagents and hazardous materials • Handling and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer's • Instructions, and enterprise procedures and regulations • Regular cleaning and/or decontaminating of equipment and work areas

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Use balances and volumetric glassware • Select and use primary and secondary standards • Select and use indicators • Perform quality assurance checks for solution performance • Calculate the concentration of the solution given the

	• Chemical reaction for the solution • Recognize control results that are not within acceptable range • Record results to enterprise standards • Interpret and follow enterprise sops • Prepare working solutions in compliance with relevant • Standards, appropriate procedures and/or enterprise requirements • Label and store solutions in accordance with enterprise Procedures • Interpret and use safety information, such as that provided by MSDS and follow relevant safety procedures to safely use laboratory chemicals glassware and equipment
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Relevant biological, chemical, food and laboratory terminology • Concept /principles of methodology • The international system of units (SI) • Concentration terms, such as % w/w, % w/v, % v/v, ppm (mg/L) and morality • Enterprise procedures for preparing solutions • Calculations required to prepare specified amounts of solutions of specified concentration • Solution terminology, chemistry of acids, bases, buffers and redox reactions • Concepts of methodology • Grades of glassware, reagents and their use • Reactions used for standardization and desirable characteristics • Enterprise communication and reporting procedures • OHS procedures for preparing, handling and disposal of solutions, including those for using corrosive materials • Relevant health, safety and environment requirements • Use of Material Safety Data Sheets (MSDS)
Underpinning Skills	Demonstrate skills of: • Interpreting and following enterprise Standard Operating Procedures (SOPs) • Determining equivalence points using indicators and graphical methods • Using calculation methods, including appropriate units, uncertainties, balancing equations, the concentration of the solution given the chemical reaction • Using appropriate materials, equipment and procedures to prepare solutions • Selecting and using primary and secondary standards and indicators • Performing assurance checks for solution performance • Recognising control results that are not within acceptable

	range • Interpreting and using safety information, such as that provided by Material Safety Data Sheets (MSDS) and follow relevant safety procedures • Following appropriate OHS, and hygiene procedures, if appropriate • Using all equipment safely and efficiently • Using enterprise procedures to calculate concentrations • Identifying solutions not fit for use • Labeling, storing and disposing of solutions appropriately • Recording and presenting data appropriately
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Perform Parasitological Examination**
Unit Code	HLT_MLT3 07 1121
Unit Descriptor	This unit covers knowledge, skills and attitude required to detect and differentiate the structure and stage of parasites using basic tests and procedures identified with the discipline of parasitological laboratory using microscope and other methods.

Element	Performance Criteria
1. Identify concept of human parasitology	1.1. Concept of human parasitology is understood 1.2. Principle of host and parasite interaction are identified 1.3. Life cycles and diagnostic stage of parasites are differentiated 1.4. Methodology of parasitological examinations are identified 1.5. Microscope set up and uses are identified
2. Process samples and associated request details	2.1. Samples and request form details are checked before they are accepted 2.2. Specimens are sorted according to tests requested, urgent status and volume 2.3. Samples and request forms that do not comply with requirements to their source are returned with reasons for non-acceptance 2.4. Acceptable samples are logged and forms requested applying required document tracking mechanisms 2.5. Samples are processed as required by requested tests 2.6. Samples and sample components are stored appropriately until ready for testing
3. Set up and use microscope	3.1. The light path is set up to optimize resolution 3.2. The appropriate objectives are selected and filtered for the sample being examined 3.3. Ensure that the lenses are made clean 3.4. Settings and alignment of the light path are adjusted to optimize performance 3.5. Sample is placed correctly on the stage

4. Perform tests	4.1. Authorized tests that are indicated for the requested investigations are selected 4.2. Quality control ***procedures*** are performed 4.3. ***Basic parasitological tests*** are conducted according to documented methodologies, 4.4. All results are recorded by noting any phenomena that may be relevant to the interpretation of results 4.5. Results are verified before releasing for clinician/client 4.6. Colleague is discussed when result interpretation is outside parameters of authorized approval 4.7. Unused sample or sample components are stored for possible future reference, under conditions suitable to maintain viability 4.8. Tested sample or sample components are stored according to organizational sample retention policy for retesting when requested.
5. Maintain a safeenvironment	5.1. Established safe work practices and PPE are used to ensure personal safety and that of other laboratory personnel 5.2. Spills are cleaned up using appropriate techniques to protect personnel, work area and environment from contamination 5.3. The generation of wastes is minimized 5.4. The safe disposal of biohazardous materials and other laboratory wastes are ensured in accordance with enterprise procedures
6. Maintain laboratory records	6.1. Entries are made on report forms or into computer systems, accurately calculating, recording or transcribing required data as required 6.2. Instrument maintenance logs are updated, as required 6.3. Security and confidentiality of all clinical information, laboratory data and records are maintained

Variable	**Range**
Procedures	May include, but not limited to: • Cleaning, hygiene and personal hygiene requirements • Enterprise procedures, sops and operating manuals • Incident and accident/injury reports • Instructions to comply with legislation, standards, guidelines • Quality system and continued improvement processes • Safety requirements for equipment, materials or products

	• Sampling procedures (labeling, preparation, storage, transport and disposal) • Schematics, work flows and laboratory layouts • Statutory and enterprise OHS requirements • Stock records and inventory • Test procedures (validated and authorized) • Training program contents • Waste minimization, containment, processing and disposal procedures
Basic parasitological tests	May include, but not limited to • Direct microscopic examination - eg. o Stool exam, Blood film, Modified AFB, Skin snip examination, • Concentration method
Equipment, materials and systems	May include, but not limited to: • Reference material for automated and manual quality • Control and quality assurance systems • Instruments for counting • Staining materials • Safe working cabinets • Centrifuges, blood mixers… • Microscopes for bright field and phase contrast examinations • Counters for single or multiple parasite types • Computer information systems, databases, record and filing systems • General laboratory glassware and equipment associated with parasitological laboratory
Communication	May involve: • Supervisors and managers (laboratory, quality and customer service) • Other laboratory or clinical personnel • Patients and clients • Personnel of accreditation agencies
Occupational health and Safety (OHS) and environmental management requirements	May include, but not limited to: • All operations must comply with enterprise OHS and environmental management requirements which may be imposed through state/regional or federal legislation - these requirements must not be compromised at any time • All operations assume the potentially hazardous nature of samples and require standard precautions to be applied where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC)

	and State/regional Departments of Health or federal legislation

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Identify parts and functions of microscope • Set up microscope for optimal resolution • Identify and count the different stages and types of parasites • Stain parasites, identify their morphology and classify them • Measure clinically useful phenomena • Contribute to the general maintenance of equipment and processes to ensure ongoing compliance with enterprise and laboratory accreditation • Recognize problems in systems and documentation • Use the enterprise information system efficiently • Critically analyze information in enterprise documents • Prepare documentation that is accurate, easily understood by the intended audience and in accordance with enterprise requirements • Manage tasks and organize work to ensure the timely completion of tasks • Use samples, reagents and materials economically and dispose of wastes safely • Use equipment safely maintains equipment, recording and reporting malfunctions appropriately.
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Parts and functions of microscope • Set up of microscope for optimal resolution • Concept of human parasitology • Principle of host and parasite interaction • Life cycles and diagnostic stage of parasites • Methodology of parasitological examinations • The necessity for a patient or client focus when performing laboratory procedures and tests, including issues of confidentiality and security of clinical and laboratory information and data • The relationships that exists between the sample and the test result, including: sample collection, the preservation and timely testing of samples, sample storage requirements and issues of artifact, sub-sampling routines, including the nature of unstable particulate suspensions • Validated tests • Quality control • Quality assurance • The use and maintenance of laboratory equipment and

	resources that contribute to accurate, precise, timely and economical generation of data for use by clinicians • Relevant health, safety and environment requirements
Underpinning Skills	Demonstrate skills to: • Identifying Parts and functions of microscope • Set up microscope for optimal resolution • Identify and count of the different stages and types of parasites • Stain and identify their morphology and classifying them • Measure clinically useful phenomena • Contribute to the general maintenance of equipment and processes to ensure ongoing compliance with enterprise and laboratory accreditation • Recognizing problems in systems and documentation • Use the enterprise information system efficiently • Prepare documentation • Organize work to ensure the timely completion of tasks • Use samples, reagents and materials economically and disposing of wastes safely • Work safely
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Perform Urine and Body Fluid analysis**
Unit Code	HLT MLT3 08 1121
Unit Descriptor	This unit covers knowledge, skills and attitude required to determine the type and quantity of different metabolic products in urine and body fluid, and identification of the different components of urine sediments using tests and procedures identified with the discipline of urinalysis laboratory.

Element	Performance Criteria
1. Identify concept of urinalysis and body fluid	1.1. Concept of renal physiology and anatomy are identified 1.2. Recognize formation and composition of ***body fluids*** 1.3. Metabolic products in urine and body fluid are identified 1.4. Testing methodology of urinalysis and body fluid is identified**.**
2. Process samples and associated request details	2.1. Specimens are sorted according to ***tests*** requested, urgent status and volume 2.2. Samples and request forms that do not comply with requirements are returned to their source with reasons for non-acceptance 2.3. Accepted samples and request forms are logged, applying required document tracking mechanisms 2.4. Samples are processed as required by requested tests 2.5. Samples and sample components are stored appropriately until ready for testing
3. Perform testing	3.1. The required ***equipment ,materials and systems*** are assembled 3.2. Authorized tests that are indicated for the requested Investigations are selected 3.3. Individual tests are conducted according to documented methodologies (standards), applying required quality control procedures 3.4. All results, including /noting any phenomena that may be relevant to the interpretation of results are recorded 3.5. Colleague is discussed when result interpretation is outside parameters of authorized approval 3.6. Results are verified before releasing for clinician/client 3.7. Tested sample or sample components are stored according to organizational sample retention policy for retesting when requested
4. Maintain laboratory records	4.1. Entries on report forms or into computer systems/laboratory information system are made accurately, recording or transcribing required data as required. 4.2. Instrument logs are maintained as required. 4.3. Records of urine received are maintained. 4.4. Security and confidentiality of all clinical information are maintained

	4.5. Laboratory data and records are maintained
5. Maintain a safe environment	5.1. Established work practices and PPE are used to ensure personal safety ***OHS*** and that of other laboratory personnel. 5.2. Spills are cleaned up using appropriate techniques to protect personnel, work area and environment from contamination. 5.3. The generation of wastes is minimized. 5.4. The safe disposal of biohazard materials and other laboratory wastes is ensured in accordance with ***enterprise procedures***.

Variable	**Range**
Body fluids	• Synovial fluid, cerebrospinal fluid, serous fluid, seminal fluid, amniotic fluids, Pleural fluids
Tests	May include, but not limited to: • Macroscopic/ physical examination of urine sample, • Microscopic examination of urine sediment, • Chemical examination of urine,
Equipment, materials and systems	May include, but not limited to: • Reference material for automated and manual quality • Control and quality assurance systems • Safe working cabinets • Centrifuges and refrigerator • Cell counter/formed Element and crystals/ • Microscopes for bright field and phase contrast examinations • Computer information systems, databases, record and • Filing systems • General laboratory glassware and equipment associated • With a urinalysis laboratory
OHS	May include, but not limited to: • All operations must comply with enterprise OHS and environmental management requirements which may be imposed through state/regional or federal legislation - these requirements must not be compromised at any time • All operations assume the potentially hazardous nature of samples and require standard precautions to be applied • Where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State/regional Departments of Health or federal legislation
Enterprise procedures	May include, but not limited to: • Cleaning, hygiene and personal hygiene requirements • Enterprise procedures, sops and operating manuals

	• Incident and accident/injury reports • Instructions to comply with legislation, standards and guidelines • Quality system and continued improvement processes • Safety requirements for equipment, materials • Sampling procedures (labeling, preparation, storage, • Transport and disposal) • Schematics, work flows and laboratory layouts • Statutory and enterprise OHS requirements • Stock records and inventory • Test procedures (validated and authorized) • Training program contents • Waste minimization, containment, processing and • Disposal procedures

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Identify and count different formed Element, parasites and crystals • Determine the quantity of metabolic products and the different components of urinary sediments • Measure clinically useful phenomena such as metabolic, renal and urinary tract disorder • Recognize problems in systems and documentation • Use the enterprise information system efficiently • Critically analyze information in enterprise documents • Prepare documentation that is accurate, easily • Understood by relevant bodies and in accordance • With enterprise requirements • Manage tasks and organize work to ensure the timely • Completion of tasks • Use samples, reagents and materials economically and dispose of wastes safely • Use equipment safely • Maintain equipment, recording and reporting malfunctions appropriately.
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Define the clinical usefulness of body fluid analysis • The necessity for a patient or client focus when performing laboratory procedures and tests, including issues of confidentiality and security of clinical and laboratory information and data • The relationships that exists between the sample and the test result, including: sample collection, the preservation and timely testing of samples, sample storage requirements and issues of artifact, sub-sampling routines, including the

	nature of unstable particulate suspensions • Validated tests • Quality control • Quality assurance • The use and maintenance of laboratory equipment and resources that contribute to accurate, precise, timely and economical generation of data for use by respected body • Relevant health, safety and environment requirements
Underpinning Skills	Demonstrate skills of: • Identifying and counting of formed Element, parasites, casts and crystals in urine • Prepare and stain body fluids • Measuring and interpreting the chemical analysis of urine • Measuring clinically useful phenomena such as metabolic, renal and urinary tract disorders • Contributing to the general maintenance of equipment and processes to ensure ongoing compliance with enterprise and laboratory accreditation • Recognizing problems in systems and documentation • Using the enterprise information system efficiently • Preparing documentation • Organizing work to ensure the timely completion of tasks • Using samples, reagents and materials economically and disposing of wastes safely • Working safely
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical laboratory Techniques Level III	
Unit Title	**Apply Computer and Mobile Health Techniques**
Unit Code	HLT MLT3 09 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to use new or upgraded Techniques. The rationale behind this unit emphasizes the

	importance of constantly reviewing work processes, skills and techniques in order to ensure that the quality of the entire business process is maintained at the highest possible level through the appropriate application of new Techniques

Element	Performance Criteria
1. Start computer, system information and features	1.1. Workspace, furniture and equipment are adjusted to suit user ***ergonomic requirements***. 1.2. Work organization is ensured to meet organizational and Occupational Health and Safety (OHS) requirements for computer operation. 1.3. Computer is started or logged on according to user procedures. 1.4. Basic functions and features are identified using system information. 1.5. Desktop configuration is customized, if necessary, with assistance from appropriate persons. 1.6. Help functions are used as required.
2. Navigate and manipulate desktop environment problems	2.1. Features are opened, closed and accessed by selecting correct ***desktop icons***. 2.2. Desktop windows are opened, re-sized and closed by using correct window functions and roles. 2.3. Shortcuts are created from the desktop, if necessary, with assistance from appropriate persons
3. Identify the existing Health technologies	3.1. The existing knowledge and techniques to Techniques are applied 3.2. Computer operating systems are utilized. 3.3. Internet browsers are opened and manipulated to search for, send and receive information 3.4. Situations are identified where existing knowledge can be used as the basis for developing new skills. 3.5. ***Mobile Techniques*** skills are acquired and used to enhance learning and provision of standard health care 3.6. ***Health*** techniques are used to enhance efficient utilization of resources and avoid duplication of efforts 3.7. New and/or upgraded equipments are identified, classified and used where appropriate, for the benefit of customers as well as the health care system.
4. Apply the functions of Techniques	4.1. Mobile/Smart phones and tablets are used for solving organizational problems 4.2. The functions of Techniques are applied to assist in solving the health and related data collection, organization, analysis and interpretation. 4.3. Testing of new or upgraded equipment is conducted according

	to the specification manual. 4.4. Features of new or upgraded equipment are applied within the organization 4.5. Sources of information is accessed, used and interpreted relating to new or upgraded equipment
5. Evaluate new or upgraded Techniques performance	5.1. New or upgraded Techniques performance is evaluated and determined by introduced Techniques (mobile/M health, tablets) 5.2. Mobiles/Smart phones and tablets are evaluated for the performance, usability and against the OHS standards 5.3. ***Environmental considerations*** from new or upgraded equipment are determined. . 5.4. Feedback is used from appropriate performance evaluation offered

Variable	**Range**
Ergonomic requirements	May include, but not limited to: • Avoiding radiation from computer screens • Chair height, seat and back adjustment • Document holder • Footrest • Keyboard and mouse position • Lighting • Noise minimization • Posture • Screen position • Workstation height and layout
Desktop icons	May include, but not limited to: • Directories/folders • Files • Network devices • Recycle bin and waste basket
Mobile technologies	May include, but not limited to: • Mobile phone set, tablet computers and accessories s
MHealth basics	May include, but not limited to: • HMIS, DHIS report, technical updates, online trainings, referral linkage

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills on: • Basic computer skills

	• Movie devices • Smart phones • Mobile devises • E Health
Required Knowledge and Attitude	Demonstrate knowledge on: • HMIS • DHIS • The existing mobile and tablets Techniques • Computer operating systems • M health techniques • New and/or upgraded equipments • New or upgraded Techniques performance • Environmental considerations • Appropriate performance evaluation.
Required Skills	Demonstrate skills in: • Use Computer Applications • Use soft wares • Internet use
Resources Implication	The following resources MUST be provided. • Access to real or appropriately simulated situations, including work areas, materials and equipment, • Documentation and information on workplace practices and OHS practices. • Computer • Mobile • HIS manual • Approved assessment tools • Certified assessor /Assessor's panel
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Apply basic health statistics and health survey**

Unit Code	HLT MLT3 10 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to apply basic health statistics and health survey methods to improve community health related activities

Element	Performance Criteria
1. Prepare for the application of health survey	1.1. Characteristics of ***health statistics*** are identified 1.2. Scales of measurement are explained 1.3. Basic principles of health statistics are applied 1.4. ***Rates and ratios*** are calculated 1.5. Basic principles of ***health survey*** are applied
2. Undertake data collection	2.1. Types of questionnaire are identified 2.2. Questionnaire is prepared and made available 2.3. Questionnaire is pre-tested, modified and amended 2.4. Necessary personnel are trained on data collection procedures 2.5. The necessary equipment/materials are identified to execute data collection 2.6. Members of community are informed about data collection dates and time 2.7. Community leaders are invited to support data collection process.
3. Compile, interpret and utilize health data	1.1 Necessary health ***data*** are collected as per organizational guideline 1.2 Information collected is classified or sorted out on the basis of a clear understanding of the purpose for maintaining the ***database system***. 1.3 Diagrammatic presentation of data are prepared 1.4 Steps to maintain confidentiality are followed according to ***prescribed procedures*** are taken. 1.5 ***Vital events*** are continuously and consistently collected and updated timely in accordance with organization procedures and guidelines 1.6 Data are prepared and utilized according to prescribed procedures and guidelines.
4. Prepare and submit reports	4.1. Reports are prepared using ***standard reporting formats*** 4.2. Reports are disseminated responsible bodies 4.3. ***Updates and reportable diseases*** are communicated to concerned bodies according to prescribe procedures and guidelines.
5. Take intervention measures	5.1. Discussions are made with ***key stakeholders*** regarding the ***health problems***

accordingly	5.2. Briefing materials throughout the ***consultation process*** are provided to identify and clarify issues of interest/concern to stakeholders and own organization 5.3. ***Feedback*** is provided to the team leader or work team on the results of the consultation process 5.4. Positive contributions are made to activities that develop an understanding of the factors contributing to the health problem of the community 5.5. Further information and data are collected when needed for better interventions

Variable	**Range**
Health statistics	Health statistics include, but not limited to: • Measure of morbidity and mortality • Measure of fertility • Measure of central tendency
Health survey	Health surveys generally include measures of risk factors, health behaviors, and non-health determinants or correlates of health such as socioeconomic status.
Rates and ratios	Rates and ratios include but not limited to: • Prevalence rate • Incidence rate • Morbidity rates • Mortality rates • Proportion
Data	Rates and ratios include but not limited to: • Prevalence rate • Incidence rate • Morbidity rates • Mortality rates • Proportion May include, but not limited to: • Vital events • Surveillance data and may be: ➢ Qualitative ➢ Quantitative Types of data required about the target group may include, but not limited to: • Demographic characteristics (e.g. Age, sex, ethnic composition, residence, education level achieved) • Patterns of behavior

	• Lifestyle
Database system	may include but not limited: • Disease surveillance reporting formats • Health registries created for different health issues (Tb, Malaria, HIV/AIDS, and Trachoma etc.) • System of activity reported in the region.
Prescribed procedures	• May be organizational procedures manual
Vital events	May include, but not limited to: • Birth • Marriage • Divorce and Death
Standard reporting formats	May include, but not limited to: • HMIS reporting formats • Immediately reportable disease formats • Weekly reportable reporting formats and others
Updates	May include, but not limited to: • Briefing major activities accomplished as needed
Reportable diseases	May include, but not limited to: • Rabies • Cholera • Neonatal tetanus • Anthrax • Yellow fever • Measles • Dysentery • Typhoid fever, etc.
Key stakeholders	May include, but not limited to: • Representatives of relevant health agencies operating in the local community • Community advocates or change agents • Representatives/leaders of the target population • Population health professionals/supervisors • Zonal, woreda and health center health service planners • State or local health service providers • Other health and/or non-government organizations
Health problems	May be identified through one of the following ways: • Consultation with supervising population health professional • Position/job description • Policy documents/legislation detailing national, state or local health goals

Consultation process	May take the form of one of the following: • Interviews (personal, phone, formal or informal) • Nominal group process • Questionnaires • Delphi method • Focus groups and Forums
Feedback	May include, but not limited to: • Written reports • Brief commentary or summary presentations
Relevant resources	May include, but not limited to: • Human resource or data collectors • Questionnaires • Registration books • Survey formats • Annual public health reports • Existing epidemiological/socio-demographic data • National population health and health promotion agencies and organizations • General practitioners/primary care service • Local health authorities • Target group representatives
Ethical considerations that guide data collection and consultation processes	May include, but not limited to: • Privacy and confidentiality • Responsibility to help a community respond to needs they identify which might not necessarily coincide with stated priority health needs

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Collect vital events and disease surveillance. • Collect and utilize population health data • Maintain health profile of the community • Compile and report health data • Conduct consultation and communication to identify community health needs
Required Knowledge and Attitude	Demonstrate knowledge of: • Basic statistical concepts and procedures • Causes and appropriate interventions or solutions • Population health data collection, compilation, interpretation and utilization

	• National and local health goals, targets and priorities • Evidence-based practice • Equity issues in population health • Basic statistical concepts and procedures. • Survey methodology • Report writing • Consultation and communication to identify community health needs
Required Skills	Demonstrate skills to: • Collect data that needs to be entered into the health database system • Collect vital events and surveillance data • Compile, interpret and utilize data • Prepare and submit reports • Communicate with clients and colleagues
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices..
Methods of Assessment	Competence may be assessed through: Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Perform Community Mobilization and Provide Health Education**
Unit Code	HLT MLT3 11 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to undertake health education, advocacy and community mobilization on identified health issues.

Element	Performance Criteria
1. Conduct health education and communication	1.1. Assessment and gap identification activities are performed according to organizational manual 1.2. Community and all available resources are organized as per content requirement 1.3. Target group identification is done according to organizational guideline 1.4. Health education plan is prepared as per the requirements of target group organizational guideline. 1.5. Methods and approaches of health communication are designed according to organizational manual 1.6. Health education service is provided as per the requirements of target group 1.7. Monitoring of service utilization and evaluation of behavioral change are noted in accordance with organizational manual 1.8. Strategies for internal and external dissemination of information are developed, promoted, implemented and reviewed as required in accordance with workplace guideline 1.9. Work related network and relationship are maintained as necessary. 1.10. Different approaches are used to meet communication needs of clients and community.
2. Rain model families	2.1. Better performing in mom to mom groups in their day today activity is identified 2.2. Space and time for training are established with consultation of appropriate personnel and community representatives 2.3. Necessary resources are identified and collected as per the training plan 2.4. Training is provided according to MOH guideline 2.5. Correct and faulty posture in ***different activities*** is explained. 2.6. Follow up and monitoring are carried out in accordance

	with workplace guideline 2.7. Well performing model household is evaluated and certified in accordance with workplace guideline
3. Plan and Undertake advocacy on identified health issues	3.1. Advocacy plan is prepared to address an identified health issues as per organizational work guideline 3.2. Community representatives are consulted to determine current health needs and priorities. 3.3. Influential community representatives and health development armies are identified and consulted to disseminate IEC-BCC activities 3.4. Continuous advocacy services are organized and provided in partnership with the ***stakeholders*** 3.5. Feedback from community consultation and advocacy is used as a basis for planning 3.6. ***Developmental and acquired Spinal health problems*** are identified 3.7. Prevention methods of spinal problems are explained

Variable	**Range**
Stakeholders	May include, but not limited to: • Bodies taking part in the activities, like: ➢ Schools ➢ Agriculture sector ➢ Women's association ➢ Youth association ➢ Development partners ➢ Local NGO ➢ Religion organizations
Community mobilization	May include, but not limited to: • Sensitization/awareness • Discussion • Steering group • Community representative • Campaign • Community conversation • Community involvement in planning and implementation
Different activities	May include, but not limited to: • Lifting • Pulling • Carrying books and others • Sitting • Standing

	• Sleeping • Reading • Typing • Phone communication • Watching • Breast feeding position
Developmental and acquired spinal health problems	May include, but not limited to: • Scoliosis • Exaggerated lordosis • Exaggerated kyphosis • Degenerative disc diseases • Degenerative spine diseases

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Communicate and convince the community and decision makers • Work with decision makers, community health development armies and volunteers • Mobilize and solve an identified community health issues including spinal health and posture. • Disseminate relevant health information to address community needs • Adopt relevant communication techniques and strategies • Demonstrate effective communication skill
Required Knowledge and Attitude	Must demonstrate knowledge on: • Behavioral change models • Advocacy and community mobilization • Local community traditions, values, cultural beliefs and expectations • Relevant policies, laws and regulations, workplace norms, procedures, programs, guidelines and professional ethics for advocacy and community mobilization • Major health problems in the community • Different activities that can affect spinal health. • Corrective methods for spinal problems • Decision and community perceptions on health issues • Planning, implementation and evaluation of advocacy and community mobilization • Adopting relevant communication techniques and strategies
Required Skills	Must demonstrate skills on:

	• Plan and manage Maternal, Neonatal and child health Demonstrate skills to: • Communicate, advocate and persuade community on identified health issues • develop supportive social networks and forming strong coalitions and joint ventures • Mobilize community on the identified health issues • Demonstrate effective communication skill • Demonstrate of listening skills, negotiation skills • Conduct meetings, writing and reporting results • Adopt relevant communication techniques and strategies • Demonstrate correct and faulty posture in the community.
Resource Requirements	The following resources must be provided: • Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level III	
Unit Title	**Apply 5S Procedures**
Unit Code	HLT MLT3 12 1121
Unit Descriptor	This unit covers the skills, attitudes and knowledge required by an employee or worker to apply 5S procedures (structured approach to housekeeping) to their own job and work area and maintains the housekeeping and other standards set by 5S. The unit assumes the employee or worker has a particular job and an allocated work area and the individual knows that processes in the work area.

Elements	Performance Criteria
1. Develop understanding of quality system	1.1 Discuss quality assurance procedures of the enterprise or organization 1.2 Understand the relationship of quality system and continuous improvement in the workplace 1.3 Identify and relate to workplace requirements the purpose and ***elements*** of quality assurance (QA) system 1.4 Explain the ***5S system*** as part of the quality assurance of the work organization
2. Sort needed items from unneeded	2.1 Identify all ***items*** in the work area 2.2 Distinguish between essential and non-essential items 2.3 Sort items to achieve deliverables and value expected by downstream and final customers 2.4 Sort items required for regulatory or other required purposes 2.5 Place any non-essential item in a appropriate place other than the workplace 2.6 Regularly check that only essential items are in the work area
3. Set workplace in order	3.1 Identify the best location for each essential item 3.2 Place each essential item in its assigned location 3.3 After use immediately return each essential item to its assigned location 3.4 Regularly check that each essential item is in its assigned location
4. Shine work area	4.1 Keep the work area clean and tidy at all times 4.2 Conduct regular housekeeping activities during shift 4.3 Ensure the work area is neat, clean and tidy at both beginning and end of shift
5. Standardize	5.1 Follow ***procedures***

activities	5.2 Follow checklists for activities, where available 5.3 Keep the work area to specified standard
6. Sustain 5S system	6.1 Clean up after completion of job and before commencing next job or end of shift 6.2 Identify situations where compliance to standards is unlikely and take actions specified in procedures 6.3 Inspect work area regularly for compliance to specified standard 6.4 Recommend improvements to lift the level of compliance in the workplace

Variable	Range
Elements of QA system	• corrective action • mission statements • monitoring procedures • SOPs • work instructions • PDCA concept
5S	5S is a system of work organization originally developed in Japan based around housekeeping principles. A close translation of the five stages in the housekeeping approach is: • Sort • Set in order • Shine • Standardize • Sustain Japanese terms: • Seiri - eliminating everything not required for the work being performed (sort) • Seiton - efficient placement and arrangement of equipment and material (set in order) • Seison - tidiness and cleanliness (shine) • Seiketsu - ongoing, standardized, continually improving seiri, • Seiton, seison • Shitsuke - discipline with leadership
Items in the work area	Includes: • Tools • Jigs/fixtures • Materials/components • Plant and equipment • Manuals

	• Personal items (e.g. Bags, lunch boxes and posters) • Safety equipment and personal protective equipment • Other items which happen to be in the work area
Sort	Sort involves keeping only what is necessary for the processes in the
Set in order	After removing unnecessary materials, the remaining materials must be those that are required immediately for either the machine or the job at hand. All of the materials/change/parts etc must have an assigned location on the production floor. Locations should be clearly marked and labeled to show what belongs where. assigning required equipment and materials appropriate locations in the work area
Shine	includes: • keeping the work area clean at all times • this should be carried out to a regular daily schedule against allowed time and, on most occasions, at the end of a job
Standardize	Once 5S is established, standardizing activities help maintain the order and the housekeeping standards. Standardizing may use procedures and checklists developed from a procedure. Standardizing includes: • Activities that help maintain the order and the housekeeping standards • Using procedures and checklists developed from a procedure • OHS measures such as signage, symbols / coding and labeling of work area and equipment
Procedures	Procedures may include: • work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions and similar instructions provided for the operation of the plant • good operating practice as may be defined by industry codes of practice (e.g. good manufacturing practice (GMP) and responsible care) and government regulations procedures may be: • written, verbal, computer based or in some other format
Sustain	includes: • making sure that daily activities are completed every day regardless of circumstance • cleaning up after a job • undertaking inspections, including: – informal inspections carried out often, at least weekly

	– formal inspections carried out at least monthly • generating continuous improvement actions from daily activities • following up specific actions to generate continuous improvement

Evidence Guide	
Critical Aspects of Competence	A person who demonstrates competence in this unit must be able to provide evidence of the ability to: • Identify own tasks and responsibilities and relate them to organization and customer requirements • Identify and explain the stages of 5s • Implement 5s in own work area • Identify waste (MUDA) in the work area • Routine practice of 5S as part of their job
Required Knowledge and Attitudes	Demonstrates knowledge of: • Operations and processes relevant to own job • Basic principle of quality assurance system and its elements • Quality procedures and continuous improvement (kaizen) • Meaning and application of 5s steps to own job and work area • Principles of efficient workplace organization • Purposes of 5s • Methods of making/recommending improvements
Required Skills	Demonstrates skills to: • Communicate with others to clarify issues during 5S implementation, communicate results and contribute suggestions for improvement • Visualize operations in terms of flow and contribution to customer outcomes • Plan own tasks in implementation of 5S • Implement 5S in own work area according to instructions • Identify waste (MUDA) • Organize, prioritizing activities and items • Read and interpret documents describing procedures • Record activities and results against templates and other prescribed formats • Working with others • Solving problems
Resources Implication	Access may be required to: • Workplace procedures and plans relevant to work area • Specifications and documentation relating to planned, currently being implemented, or implemented changes to work processes and

	procedures relevant to the candidate • Documentation and information in relation to production, waste, overheads and hazard control/management • Reports from supervisors/managers • Case studies and scenarios to assess responses to contingencies
Methods of Assessment	A holistic approach should be taken to the assessment. Competence in this unit may be assessed by using a combination of the following to generate evidence: • Demonstration in the workplace • Workplace projects • Suitable simulation • Case studies/scenarios (particularly for assessment of contingencies, improvement scenarios, and so on) 2.1. Targeted questioning In all cases it is expected that practical assessment will be combined with targeted questioning to assess underpinning knowledge.
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting. Assessment of performance must be undertaken in a workplace using or implementing 5S as competitive systems and practices.

NTQF Level IV

Occupational Standard: Medical Laboratory Techniques IV	
Unit Title	**Use Info-Techniques Devices in the Workplace**
Unit Code	**HLT MLT4 01 1121**
Unit Descriptor	This unit covers the knowledge, skills and attitude required to use devices in the workplace including identifying info Techniques equipment and systems; setting up and shutting down equipment for use; and inputting, retrieving and presenting files/data in accordance with work requirements.

Element	Performance Criteria
1 Identify info Techniques systems	1.1. Types of info Techniques equipment used in the work area are identified 1.2. Functions of equipment, component parts and accessories are identified 1.3. Applications for workplace activities of the different info Techniques equipment and systems are interpreted 1.4. Routine faults in operating systems, software applications and operator errors are identified 1.5. Sources of information on rectifying/reporting faults with operating equipment, systems and application are identified
2. Access and operate computer-based equipment and systems	2.1. Work environments and equipment are adjusted to meet ergonomic requirements and ***workplace*** policy and procedures 2.2. Systems are accessed and checked where required for viruses 2.3. Equipment are set up for work requirements in accordance with workplace procedures and manufacturers guidelines 2.4. Operating manuals and/or help screens for ***info Techniques equipment*** and software are used to inform work practices 2.5. Software packages and accessories for required application are selected and accessed 2.6. Required file and/or data to be accessed is identified 2.7. Files/data are filed according to workplace 2.8. Shut-down procedures for files, ***applications*** and equipment are followed
3. Store and present files/data	3.1. Data is entered using appropriate equipment, keyboard/mouse, bar code reader, touch screen or other system

	3.2. Accurate input is confirmed 3.3. Files are accessed in accordance with workplace procedures 3.4. Data is manipulated to suit work requirements and checked for accuracy 3.5. Saved files are accessed through relevant directories 3.6. Information and disk(s) are stored where appropriate 3.7. ***Information*** is presented using computerized projection saved where necessary.
4.Implement work place procedure for management and security of data.	4.1. Security procedures are followed in accordance with workplace procedures 4.2. Precautions against the loss or corruption of data are followed in accordance with workplace procedures
5. Shut down computer	5.1. All open applications are closed. 5.2. Computer is shut down according to user procedures.

Variable	**Range**
Workplace	May include large, medium or small worksites
Info Techniques equipment	May include, but not limited to: • Keyboards • Monitors • Bar code readers • Printers • Central processors • CD-ROM drives • Floppy disk drives • Zip drives • USB drives • Touch screens • Personal Digital Assistant (PDA) • Visual display units • Desktop computers • Laptop computers • Radio frequency devices • Computer driven projectors
Applications	May include, but not limited to: • Word processing software • Inventory control and stock management systems • Electronic Data Interchange (EDI) systems • Information databases and storage systems • Invoicing and payment systems • Manifests control systems • Work organization systems

	• Networks including intranet/internet browsers • Computerized presentation software • Computerized control/monitoring systems
Information	May include, but not limited to: • Goods identification numbers and codes • Manifests, bar codes, goods and container identification/serial number • Manufacturer's instructions concerning the use computing equipment • Workplace procedures and policies for the use of computer equipment • Supplier and/or client instructions • Material safety data sheets • Relevant codes of practice • Safe working or other notices • Relevant legislation, regulations and related documentation • Award, enterprise bargaining agreement, other industrial arrangements • Standards and certification requirements • Quality assurance procedures • Emergency procedures
Personnel	May include, but not limited to: • Workplace personnel • Site visitors • Contractors • Official representatives
Communication	May include, but not limited to: • Phone/mobile phones • Electronic Data Interchange (EDI) • Fax • Email • Internet • Radio • Oral, aural or signed communications

Evidence Guide	
Critical Aspects of Competence	Demonstrate skills and knowledge to: • Relevant legislation and workplace procedures • Identify and use computer equipment, software, processes and procedures required within the context of the job • Other relevant aspects of the range statement • Correctly operating all info Techniques devices used within the workplace in accordance with operational requirements • Correctly identifying fault finding procedures
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Relevant OHS procedures and guidelines concerning the use of computer equipment in the workplace

	• OHS risks and hazards when using computer equipment for work tasks, and ways of controlling the risks/hazards • Workplace procedures for the use of computer equipment and application software appropriate for work role • Typical problems that can occur when using info Techniques devices, and computer applications in the workplace and related appropriate action that can be taken to prevent or solve them • Housekeeping standards and procedures required in the workplace • Workplace or site layout
Underpinning Skills	Demonstrates skills to: • Communicate effectively with others when using info Techniques devices in the workplace • Read and interpret instructions, procedures, information and manuals relevant to the use of info Techniques devices in the workplace • Interpret and follow operational instructions and prioritize work • Access and/or complete electronic documentation through the use of info Techniques devices in the workplace • Identify and use computer equipment, software, processes and procedures required within the context of the job • Work collaboratively with others when using info Techniques devices in the workplace • Promptly report and/or rectify any identified problems, faults or malfunctions that may arise when using info Techniques devices in the workplace in accordance with regulatory requirements and workplace procedures • Implement contingency plans for unanticipated situations that may arise when using info Techniques devices in the workplace including the use of security and backup software and procedures • Apply precautions and required action to minimize, control or eliminate hazards that may exist when using info Techniques devices in the workplace • Monitor work activities in terms of planned schedule • Modify activities depending on differing operational contingencies, risk situations and environments • Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment • Adapt to differences in software and equipment in accordance with standard operating procedures • Maintain eye-hand coordination
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to

	information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level IV	
Unit Title	**Perform Microbiological Tests**
Unit Code	HLT MLT4 02 1121
Unit Descriptor	This unit covers knowledge, skills and attitude required to identify microorganisms such as bacteria, fungi, and viruses using staining techniques and direct examination procedures, and to prepare culture media for culture, isolation and identification of micro-organisms in order to investigate the physiology and pathology of human.

Element	Performance Criteria
1. Identify concept of microbiology	1.1. Concept of microbiology is identified 1.2. Classification microorganisms and effects of microorganisms are identified 1.3. Testing methodology of microbiology examinations is identified 1.4. Microscope set up and use are identified
2. Receive samples and process associated request forms	2.1. Check samples and request form details before they are accepted 2.2. Samples and request forms that do not comply with requirements to source are returned with reasons for non-acceptance 2.3. Samples, recording details that allow accurate tracking and chain of custody are logged 2.4. Distribute samples for local testing or dispatch samples to other testing facilities 2.5. Samples are stored appropriately where testing or transport is to be delayed
3. Prepare for safe microbiological work and aseptic technique applications	3.1. Work area and ***equipment*** required for the safe handling of materials that may contain micro-organisms of specified risk groups are selected 3.2. Protective apparel is worn by replacing it when contamination is suspected 3.3. Correct disinfection procedures are applied to work areas before and after use 3.4. Relevant emergency equipment are located for timely response to microbiological accidents 3.5. Standard precautions are applied when handling biological

	materials 3.6. The production and release of aerosols are minimized using biological safety cabinets where necessary 3.7. Spills are cleaned, and all spills and suspected incidents reported to supervisor 3.8. Hands are washed before and after laboratory work 3.9. The safe disposal of biohazardous materials and other laboratory wastes are ensured in accordance with enterprise procedures
4. Prepare and perform direct examination	4.1. ***Liquid films*** of specimens are prepared for direct observation for motility or cell structure 4.2. Samples are prepared to concentrate material for subsequent microscopy 4.3. Examination wet film is performed using microscopy for identification of micro-organisms 4.4. All results, noting any phenomena that may be relevant to the interpretation of results are recorded 4.5. Results are verified before releasing for clinician/client 4.6. Unused sample or sample components are stored for possible future reference, under conditions suitable to maintain viability 4.7. Tested sample or sample components are stored according to organizational sample retention policy for retesting when requested
5. Perform examination of stained samples	5.1. Staining techniques are selected to demonstrate required cellular characteristics 5.2. Films/Smears of samples for subsequent staining are prepared to enable microscopic identification of cells 5.3. Prepared films are stained to demonstrate diagnostically useful characteristics 5.4. Examination stained film is performed using microscopy for identification of micro-organisms 5.5. All results, noting any phenomena that may be relevant to the interpretation of results are recorded 5.6. Results are verified before releasing for clinician/client 5.7. Unused sample or sample components are stored for possible future reference, under conditions suitable to maintain viability 5.8. Tested sample or sample components are stored according to organizational sample retention policy for retesting when

	requested ,
6. Prepare culture media	6.1. Mixture of ***media*** and solvent are prepared to ensure solution and even settling of heat soluble materials 6.2. Media is labeled to allow tracking in subsequent processes 6.3. A vessel large enough is used to endure adequate mixing and heating of the media 6.4. Media is dispensed into vessels for sterilization, leaving room for expansion during heating and cooling
7. Sterilize media	7.1. The sterilizer is load in keeping with maximum permitted loads and appropriate positioning of materials 7.2. Ensure a ***sterilization*** indicator is correctly placed with the load to monitor sterilization process 7.3. Sterilization cycle is operated in accordance with manufacturer's requirements to achieve sterilization at the required settings 7.4. Media cooled to the temperature specified in the media formulation procedures
8. Pour, label and store media	8.1. Labile constituents are added where necessary, under conditions that will not lead to their denaturation or contamination of media 8.2. Even mixing of additives and media is ensured before dispensing 8.3. Media is aseptically dispensed to minimize occurrence of procedural contamination 8.4. Media is labeled to allow for selection, avoiding areas of the culture vessel required for examination of colony growth 8.5. Media is stored to maximize shelf life and minimize contamination 8.6. Batch media is dated to ensure correct batch rotation 8.7. Control plates are incubated as a sterility check
9. Perform quality control checks	9.1. Media is inspected for any evidence of possible contamination or problems with structure or sterilization 9.2. Usability of selective media is checked by growth of expected organism 9.3. Stored stocks are checked at regular intervals for conformance to required standards
10. Maintain records of laboratory work	10.1. Entries on report forms or into computer systems are made accurately calculating, recording or transcribing data, as required

	10.2. Instrument logs are maintained as required by accreditation checklists 10.3. Security and confidentiality of all clinical information, laboratory data and records are maintained

Variable	Range
Equipment	May include, but not limited to: • PPE such as gloves, gowns, masks and safety glasses and gloves for working with extremes of heat and cold • Microscopes with bright field and other relevant illumination systems and stereomicroscopes • Counting devices • Bunsen burners • Incubators and water baths anaerobic jars, fermentation chambers, continuous culture systems and other devices for controlling growth environments of micro-organisms • Stains rack • Slides • Laboratory glassware and measuring equipment • Disinfecting and sterilizing solutions and equipment, such as Ultraviolet (UV) lamps, autoclaves • Materials suitable for the safe containment, collection, processing and disposal of biological and non-biological wastes • Balance • Phmeter • Hot plate stirrer and Bunsen burners • Autoclave and incubator • Membrane filtration equipment • Measuring cylinders, flasks and glassware and Petri-dishes • Distilled water apparatus • Automatic agar pourers • Labeling equipment • Refrigerators • Sterilization indicators • Self-refilling syringes • Falcon dishes • Media storage bottles and tissue culture bottles
Media	Maybe prepared from: • Formulated powders obtained from microbiological companies • First principles under supervision of a technical officer or scientist
Sterilization	May include, but not limited to: • Autoclaving • Steam and membrane filtration

	• Boiling • Microwaving • Radiation • High temperature • High pressure steam • Gas • Chemical treatments
Culture media	May include, but not limited to: • Agars • Broths • Solutions • Slopes • Basic balanced salt solutions • Deeps • Enriched media, such as blood sugar, chocolate agar, • Tetrathionatebroth and selenite broth • Control media • Differential media, such as eosin-methylene blue agar and • Macconkey's agar • Selective media, such as deoxycholate-citrate agar, • Lowenstein-Jensen medium • Labile constituents, such as blood
Quality control checks	May include, but not limited to: • Streaking out of cultures to a single colony • Lawn cultures
Standards, procedures and/or enterprise requirements	May involve: • Cleaning, hygiene, personal hygiene requirements • Enterprise procedures, standard operating procedures • (sops) and operating manuals • Incident and accident/injury reports • Instructions to comply with new legislation, standards, Guidelines • Quality system and continued improvement processes • Safety requirements for equipment, materials or products and Material Safety Data Sheets (MSDS) • Sampling procedures (labeling, preparation, storage, Transport and disposal) • Schematics, work flows and laboratory layouts • Test procedures (validated and authorized) • Waste minimization, containment, processing and Disposal procedures
Communication	May involve: • Supervisors and managers (laboratory, quality and Customer service) • Personnel in other laboratories in the enterprise or in other enterprises to which work may be referred customers, patients and clients

	• External auditors and accreditation agencies (e.g. • National Association of Testing Authorities (NATA))
Hazards	May include, but not limited to: • Micro-organisms and agents associated with soil, air, Water, blood and blood products, and human or animal Tissue and fluids • Sources of heat, such as ovens, burners and autoclaves • Sharps and broken glassware • Fluids under pressure and such as steam • Radiation used for sterilization

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills on: • Not contaminate him/herself, other people, the work area, equipment or the samples or materials under test • Not contaminate media or reagents during manipulations involving transfer of cultures • Identify parts and functions of microscope • Set up microscope for optimal resolution • Identify artifacts or image aberrations attributable to misalignment or obstruction of light paths or condensers used in bright field, dark ground, phase and fluorescent microscopy, or with other steps in microscopic examinations • Be consistently accurate in the identification of gram reactions and AFB staining • Prepare data and documentation that is accurate, concise and in accordance with enterprise requirements • Report all incidents or accidents • Disinfect any spillage and safely dispose of all contaminated materials • Decontaminate the work area upon completion of work. • Prepare culture media which is free of contamination to facilitate the optimal growth of organisms and cells use appropriate sterilization techniques, such as maintaining adequate space between containers • Perform post-sterilization procedures, such as dispensing or adding using aseptic technique ensure the sterilized media has cooled down sufficiently to ensure that heat labile constituents, such as blood, hormones or antibodies are not inactivated when added to the media • Consistently follow enterprise procedures • Report non-compliances, anomalies or out of specification results.
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Parts and functions of microscope

	• Set up and use of microscope for optimal resolution • Microbiological terminology, including, where relevant, that of bacteriology, parasitology, virology and mycology • Disinfection and sterilization as applied to practical aspects of microbiology • Cell biology and chemistry related to laboratory phenomena, such as growth and isolation of organisms for identification • Need for accurate identification of sample source (e.g. Body, specimen, process line and field location) • Basic microbiological concepts and terminology such as growth rates in culture, production of gas and haemolysis of red cells in media • Growth requirements of micro-organisms (bacteria, fungi, protozoans, viruses and multi-cellular parasites) in terms of their laboratory culture • The purpose, content and features of culture media and the relationship between the correct preparation of culture media and the optimal growth of organisms or cells nature, properties and use of a range of biological media • The relationship between sterile practices, hygiene procedures and the ability to obtain growth free of contamination • The importance of physical requirements, such as phand temperature on optimal growth of organisms and cells • The effect of inappropriate storage on culture media quality and performance • Cleaning and sanitizing requirements of equipment and work area • Relevant health, safety and environment requirements
Underpinning Skills	Demonstrate skills of: • Identifying Parts and functions of microscope • Set up microscope for optimal resolution • Using protective clothing and biological safety cabinets • Safely performing tasks for the culture, isolation, identification and use of micro-organisms • Not contaminating oneself, other people, the work area, equipment or the samples or materials under test • Not contaminating media or reagents during manipulations involving transfer of cultures • Identifying artifacts or image aberrations attributable to misalignment or obstruction of light paths or condensers used in bright field, dark ground, phase and fluorescent microscopy, or with other steps in microscopic examinations • Gram reactions • Describing bacterial colony forms on common media used

	in bacteriological investigations • Preparing documentation that is accurate, concise and in accordance with enterprise requirements • Reporting incidents or accidents • Disinfecting spillage and safely disposing of all contaminated materials • Decontaminating the work area upon completion of work
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level IV	
Unit Title	**Perform Hematological Tests**
Unit Code	HLT MLT4 03 1121
Unit Descriptor	This unit covers knowledge, skills and attitude required to identify concepts of physiology and anatomy of human hematopoietic organs, function, activity and interactions of cellular and plasma components of blood, and principle of testing methodology, and prepares samples for basic hematological tests.

Element	Performance Criteria
1. Identify concept of hematology	1.1. Concept of hematology is identified 1.2. Process of production of blood cells is identified 1.3. Classification blood cells are identified 1.4. ***Testing*** methodology of hematological tests are identified 1.5. Microscope set up and use are identified
2. Process samples and associated request details	2.1. Check samples and request details are accepted 2.2. Specimens are sorted according to tests requested, urgent status and volume 2.3. Samples and request forms that do not comply with requirements to their source are returned with reasons for non-acceptance 2.4. Acceptable samples and request forms are logged by applying required document tracking mechanisms 2.5. Samples are processed as required by requested tests 2.6. Samples and sample components are stored appropriately until ready for testing 2.7. Blood film is prepared for hematological tests 2.8. Different staining procedures required in hematological tests are processed
3. Perform basic hematology tests	3.1. Authorized tests procedure that are indicated for the requested investigations is selected 3.2. Complete Blood Count (CBC)is performed (Manual and Automated method) 3.3. Hemoglobin (Hg)test is conducted 3.4. Hematocrit (HCT) determination is carried out 3.5. Erythrocyte Sedimentation Rate (ESR) is determined

	3.6. Red Blood Cell (RBC) indices are calculated 3.7. Tests results ,noting any phenomena that may be relevant to the interpretation of results are interpreted and reported 3.8. Advice of section head or other responsible colleague is sought when result interpretation is outside parameters of authorized approval 3.9. All results are recorded on laboratory log books and/or laboratory information system soft ware's 3.10. Results are verified before releasing for clinician/client 3.11. Communication of test results is performed 3.12. Tested sample or sample components are stored according to organizational sample retention policy for retesting when requested
4. Maintain a safe environment	4.1. Established ***Occupational Health Safety (OHS)***work practices and personal protective equipment are used to ensure personal safety and that of other laboratory personnel 4.2. Spills are cleaned up using appropriate techniques to protect personnel, work area and environment from contamination 4.3. The generation of wastes is minimized 4.4. Ensure the safe disposal of biohazardous materials and other laboratory wastes in accordance with enterprise procedures
5. Maintain laboratory records	5.1. Make entries on report forms or into computer systems, accurately calculating, recording or transcribing required data as required 5.2. Instrument maintenance logs are updated as required by accreditation requirements 5.3. Security and confidentiality of all clinical information, laboratory data and records are maintained

Variable	**Range**
Tests	May include, but not limited to: • Complete blood cell counted :total leukocyte count(TLC), Differential Leukocyte Count (DLC), Red Blood Cell (RBC) count, Platelet, Reticulocyte count , Eosinophil count • Hemoglobin (Hg)test , hematocrit (HCT) determination , Red Blood Cell (RBC) indices , Erythrocyte Sedimentation Rate (ESR)

Communication	May involve: • Supervisors and managers (laboratory, quality and • Customer service) • Other laboratory or clinical personnel • Patients and clients • Personnel of accreditation agencies (e.g. national • Association of Testing Authorities (NATA))
OHS	May include, but not limited to: • All operations must comply with enterprise OHS and environmental management requirements which may be imposed through state/regional or federal legislation - these requirements must not be compromised at any time • All operations assume the potentially hazardous nature of samples and require standard precautions to be applied • Where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State/regional Departments of Health or federal legislation
Equipment, materials and systems	May include, but not limited to: • Blood mixers • Reference material for automated and manual quality control and quality assurance systems • Instruments for the semi-automated or automated electronic counting and partial characterization of blood cells, • The hemoglobinometer • The computation of red cell indices • Staining equipment • Safe working cabinets • Centrifuges, water baths and incubators • Volumetric glassware and measuring devices • Cell counting chambers • Microscopes for bright field and phase contrast examinations • Complete blood cell counting analyzer • Counters for single or multiple cell types • Computer information systems, databases, record and • Filing systems • General laboratory glassware and equipment associated with a hematology laboratory

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Count and measure cells • Derive cell data that can assist with classification of cell populations • Stain cells, identify their morphology and classify them

	• Determine the level of cells /CBC/ • Determine the amount and function of blood components, such as haemoglobin and other substances quantified by spectrophotometry • Measure clinically useful phenomena, such as erythrocyte sedimentation • Recognize problems in systems and documentation • Use the enterprise information system efficiently • Critically analyze information in enterprise documents • Prepare documentation that is accurate, easily understood by the intended audience and in accordance with enterprise requirements • Manage tasks and organize work to ensure the timely completion of tasks • Use samples, reagents and materials economically and dispose of wastes safely • Use equipment safely • Maintain equipment, recording and reporting malfunctions appropriately.
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • The necessity for a patient or client focus when performing principles, methodslaboratory procedures of tests, including issues of confidentiality and security of clinical and laboratory information and data • The relationships that exists between the sample and the test result, including: ➢ Sample collection ➢ The preservation and timely testing of samples • Sample storage requirements and issues of artifact • Sub-sampling routines, including the nature of unstable particulate suspensions • Validated tests • Quality control • Quality assurance • The use and maintenance of laboratory equipment and resources that contribute to accurate, precise, timely and economical generation of data for use by clinicians • Hematological responses to infection andimmunisation and malignancy • Relevant health, safety and environment requirements
Underpinning Skills	Demonstrate skills of: • Counting and measuring cells • Deriving cell data that can assist with classification of cell populations • Staining cells, identifying their morphology and classifying them • Determining of the amount and function of blood

	components • Measuring clinically useful phenomena, such as erythrocyte sedimentation or detecting markers of immune response • Contributing to the general maintenance of equipment and processes to ensure ongoing compliance with enterprise and laboratory accreditation • Recognizing problems in systems and documentation • Using the enterprise information system efficiently • Preparing documentation • Organizing work to ensure the timely completion of tasks • Using samples, reagents and materials economically and disposing of wastes safely • Working safely
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level IV	
Unit Title	**Perform Serological Tests**
Unit Code	HLT MLT4 04 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to identified concepts of immunology, serology, perform different serological tests and procedures.

Element	Performance Criteria
1. Identifyconcept of immunology and serology	1.1. Concept of antigen and antibody are identified 1.2. Principle of antigen and antibody reaction are identified 1.3. Factors affection antigen and antibody reaction are identified 1.4. Methodology of serological tests are identified
2. Process samples	2.1. Samples and request forms are checked and matched before they are accepted. 2.2. Samples and request forms that do not comply with requirements are returned to their source with reasons for non-acceptance. 2.3. Acceptable samples are logged by applying required document tracking mechanisms. 2.4. Samples are processed as required by requested tests. 2.5. Sample components are stored appropriately until required for testing
3. Perform tests	3.1. Authorized tests that are indicated for the requested investigations are selected. 3.2. Individual ***serological tests*** are conducted according to documented methodologies, applying required quality control procedures. 3.3. All results, noting any phenomena that may be relevant to the interpretation of results are recorded. 3.4. When result interpretation is outside parameters of authorized approval is discussed with colleague 3.5. Results are verified before releasing for clinician/client 3.6. Tested sample or sample components are stored according to organizational sample retention policy for retesting when requested
4. Maintain laboratory records	4.1. Entries on report forms or into computer systems/laboratory information system are made accurately, recording or transcribing required data as required.

	4.2. Instrument logs are maintained as required. 4.3. Records of urine received are maintained. 4.4. Security and confidentiality of all clinical information, laboratory data and records are maintained
5. Maintain a safe environment	5.1. Established work practices and PPE are used to ensure ***personal safety*** and that of other laboratory personnel. 5.2. Spills are cleaned up using appropriate techniques to protect personnel, work area and environment from contamination. 5.3. The generation of wastes is minimized. 5.4. The safe disposal of biohazard materials and other laboratory wastes is ensured in accordance with ***enterprise procedures***.

Variable	**Range**
Serological tests	Include: • Antigen detection • Antibody detection
Personal safety	May include, but not limited to: • All operations must comply with enterprise OHS and environmental management requirements which may be imposed through state/regional or federal legislation - these requirements must not be compromised at any time • All operations assume the potentially hazardous nature of samples and require standard precautions to be applied • Where relevant, users should access and apply current health institution understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State/regional Departments of Health or federal legislation
Enterprise procedures	May include, but not limited to: • Cleaning, hygiene and personal hygiene requirements • Enterprise procedures, Standard Operating Procedures (SOPs) and operating manuals • Guidelines, policies and business rules of the Ethiopian • Incident and accident/injury reports • Instructions to comply with legislation, standards, guidelines and codes • Quality system and continued improvement processes • Safety requirements for equipment, materials or products • Sampling procedures (labeling, preparation, storage, Transport and disposal) • Schematics, work flow and, laboratory layouts • Statutory and enterprise OHS • OHS requirements

	• Stock records and inventory • Test procedures (validated and authorized) • Waste minimization, containment, processing and disposal procedures
Equipment, materials and systems	May include, but not limited to: • Centrifuges, light boxes, calibrated pipettes, water baths, incubators and microscopes • Laboratory Information Management Systems (LIMS),computer databases, record and filing systems • General laboratory glassware and equipment identified with serology laboratory • Antisera (antigen and antibody) and other relevant reagents

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Perform tests accurately and organize work so that the needs of all relevant patients and clients are met in a timely fashion • Detect and record accurate evidence of antigen- antibody reactions • Recognize problems in systems and documentation • Use enterprise information systems efficiently • Critically analysis information/documents • Prepare documentation that is accurate, concise and in accordance with enterprise requirements • Manage tasks and organize work to ensure the timely • Release of blood and blood products/serum or plasma/, as they complete routine tasks • Use samples, reagents and materials economically and dispose of wastes safely • Use equipment safely • Maintain equipment, recording and report malfunction appropriately.
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Scientific, medical, clinical, technical and workplace • Terminology relevant to normal and abnormal serology • Concept of antigen and antibody • Principle of antigen and antibody reaction • Factors affection antigen and antibody reaction • Methodology of serological tests • Testing procedures for the determination of diseases and the detection of antigen and/or antibodies • Types of blood products/plasma and serum/ and their use • Validated and authorized procedures, as described in the laboratory's manual of procedures • Relevant health, safety and environment requirements
Underpinning Skills	Demonstrate skills of: • Following the laboratory's validated and authorized

	procedures • Selecting and applying testing procedures in terms of the suspected or known nature of the antigen and/or antibody and their possible range of testing behaviors • Detecting and recording accurate evidence of antigen-antibody reactions • Selecting and applying confirmatory tests as required • Critically analyzing information/documents and recognizing problems in systems and documentation • Using enterprise information systems efficiently • Preparing documentation that is accurate, concise and in accordance with enterprise requirements • Managing tasks and organizing work to ensure the timely release of test results • Using samples, reagents and materials economically and disposing of wastes safely • Using equipment safely • Maintaining equipment, recording and report malfunctions appropriately
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level IV	
Unit Title	**Perform Immuno-Haematological Tests**
Unit Code	HLT_MLT4 05 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to identify concepts of immunohematology, immunology, perform blood typing, cross matching routine and anti-immunoglobulin test and procedures that are part of the requirements of pre- and post-blood transfusion practice.

Element	Performance Criteria
1. Identify concept of Immunohematology	1.1. Concept of Immunohematology is identified 1.2. Blood typing is classified 1.3. Type of blood cross matching is identified 1.4. Blood components and products are identified 1.5. Methodology of blood typing and cross matching are identified 1.6. Microscope set up and use are identified
2. Process samples and associated request forms	2.1. Samples and request forms are checked and matched before they are accepted 2.2. Samples and request forms that do not comply with requirements to their source are returned with reasons for non-acceptance 2.3. Specimens are sorted according to tests requested, urgent status and volume 2.4. Acceptable samples are logged by applying required document tracking mechanisms 2.5. Samples are processed as required by requested tests 2.6. Sample components are stored appropriately until required for testing
3. Perform tests	3.1. Authorized tests that are indicated for the requested investigations are selected 3.2. ABO grouping/typing is performed according to documented methodologies, applying required quality control ***procedures*** 3.3. RH typing is performed 3.4. Compatibility test/Cross matching is performed 3.5. Anti-immunoglobulin test is performed 3.6. Test results are interpreted and reported according to standard operating procedures

	3.7. All results, noting any phenomena that may be relevant to the interpretation of results are recorded 3.8. When result interpretation is outside parameters of authorized approval is discussed with colleague 3.9. Results are verified before releasing for clinician/client 3.10. Communication of results is performed 3.11. Tested sample or sample components are stored according to organizational sample retention policy for retesting when requested 3.12. Complete documentation on laboratory log book/laboratory information system application soft ware's are performed to permit the before issuing of blood or blood components that have been cleared for use by clinical staff
4. Maintain a safe environment	4.1. Established ***OHS*** work practices and PPE are used to ensure personal safety and that of other laboratory personnel 4.2. Spills are cleaned up using appropriate techniques to protect personnel, work area and environment from contamination 4.3. The generation of wastes is minimized 4.4. The safe disposal of bio-hazardous materials and other laboratory wastes are ensured in accordance with enterprise procedures
5. Maintain laboratory records	5.1. Entries are made on report forms or into computer systems, accurately recording or transcribing required data as required 5.2. Instrument logs are maintained as required by accreditation checklists 5.3. Records of blood and blood products received, used and returned to supplier are maintained 5.4. Security and confidentiality of all clinical information, laboratory data and records are maintained

Variable	**Range**
OHS	May include, but not limited to: • All operations must comply with enterprise OHS and environmental management requirements which may be imposed through state/regional or federal legislation - these requirements must not be compromised at any time • All operations assume the potentially hazardous nature of samples and require standard precautions to be applied

Procedures	May include, but not limited to: • Cleaning, hygiene and personal hygiene requirements • Enterprise procedures, Standard Operating Procedures (SOPs) and operating manuals • Guidelines, policies and business rules of the Ethiopian • Red Cross Blood Service that are operable from time totime incident and accident/injury reports • Instructions to comply with legislation, standards, guidelines and codes • Guidelines for Pre-transfusion Testing, published by the Ethiopian national Blood bank • Quality system and continued improvement processes • Safety requirements for equipment, materials or products • Sampling procedures (labeling, preparation, storage, Transport and disposal) • Schematics, work flow and, laboratory layouts • Statutory and enterprise OHS • OHS requirements • Stock records and inventory • Test procedures (validated and authorized) • Waste minimization, containment, processing and disposal procedures
Equipment, materials and systems	May include, but not limited to: • Centrifuges, light boxes, calibrated pipettes, water baths, incubators and microscopes • Laboratory Information Management Systems (LIMS),computer databases, record and filing systems • General laboratory glassware and equipment identified with an immunohaematology laboratory • Antisera and phenotyped red cells and other relevant Reagents

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • Perform tests (ABO Grouping , Rh grouping, Cross matching , anti-immunoglobulin test)accurately and organize work so that the needs of all relevant patients and clients are met in a timely fashion • Detect and record accurate evidence of blood group antigen and antibody reactions • Recognize problems in systems and documentation • Use enterprise information systems efficiently • Critically analyze information/documents • Prepare documentation that is accurate, concise and in accordance with enterprise requirements • Manage tasks and organize work to ensure the timely release of blood and blood products, as they complete

	routine tasks • Use samples, reagents and materials economically and dispose of wastes safely • Use equipment safely • Maintain equipment, recording and report malfunctions appropriately.
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Scientific, medical, clinical, technical and workplace • Terminology relevant to normal and abnormal immunology and immunohaematology • Concept of immunohematology • Blood typing classification • Type of blood cross matching • Blood components and products • Methodology of blood typing and cross matching • Microscope set up and use are identified • Antigen antibody reactions • Testing procedures for the determination of blood groups and the detection of antibodies • Types of blood products and their use • Validated and authorized procedures, as described in the laboratory's manual of procedures • Relevant health, safety and environment requirements
Underpinning Skills	Demonstrates skills to: • Classify blood typing • perform type of blood cross matching • Set up and use microscope • Following the laboratory's validated and authorized procedures • Selecting and applying testing procedures in terms of the suspected or known nature of the antibody and its possible range of testing behaviors • Perform ABO grouping , RH typing , cross matching and anti-immunoglobulin • Detecting and recording accurate evidence of blood group antigen and antibody reactions • Selecting, testing and issuing blood cleared for transfusion • Selecting and applying confirmatory tests as required • Selecting and issuing blood products for therapeutic or prophylactic use • Critically analyzing information/documents and recognizing problems in systems and documentation • Using enterprise information systems efficiently • Preparing documentation that is accurate, concise and in accordance with enterprise requirements • Managing tasks and organizing work to ensure the timely release of blood and blood products

	• Using samples, reagents and materials economically and disposing of wastes safely • Using equipment safely • Maintaining equipment, recording and report malfunctions appropriately
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level IV	
Unit Title	**Perform Clinical Chemistry Tests**
Unit Code	HLT_MLT4 06 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to identify concepts of human physiology, anatomy of organs, clinical chemistry, and principle of testing methodology. In addition, interpret clinical chemistry test requirements, prepare samples, conduct pre-use and calibration checks on equipment and perform routine chemical tests/procedures, including data processing and interpretation of results and tracking of obvious test malfunctions where the procedure is standardized.

Element	Performance Criteria
1. Identify concept of clinical chemistry	1.1. Concept of physiology and anatomy of organs is identified 1.2. ***Chemical principles and concepts*** are identified 1.3. Factors affection chemical reaction are identified 1.4. Testing methodology of clinical chemistry is identified
2. Review test requirements	2.1. Test request are reviewed to identify samples to be tested, test method and equipment/instruments involved 2.2. ***Hazards*** and enterprise ***control measures*** are identified associated with the sample, preparation/test methods, reagents and/or equipment 2.3. Work sequences are planned to optimize testing of multiple samples
3. Process samples	3.1. Samples and request forms are checked and matched before they are accepted. 3.2. Samples and request forms that do not comply with requirements are returned to their source with reasons for non- acceptance. 3.3. Acceptable samples are logged, applying required document tracking mechanisms. 3.4. Samples are processed as required by requested tests. 3.5. Sample components are stored appropriately until required for testing
4. Check equipment before use	4.1. Equipment/Instruments are set up in accordance with test method requirements 4.2. Pre-use and safety checks are performed in accordance with relevant enterprise and operating procedures 4.3. Faulty or unsafe components and equipment are identified and report to appropriate personnel 4.4. Equipment calibration is checked using specified ***standards***

	and procedures 4.5. Out of calibration equipment/instruments are identified 4.6. Availability of reagents in sufficient quality and quantity is ensured.
5. Perform Clinical Chemistry Tests	5.1. Authorized tests that are indicated for the requested investigations are selected. 5.2. Blood sugar ***tests*** are conducted according to documented methodologies, applying required quality control procedures. 5.3. Liver panel ***tests*** are conducted according to documented methodologies, applying required quality control procedures 5.4. Renal panel ***tests*** are conducted according to documented methodologies, applying required quality control procedures 5.5. Lipid panel ***test*** is conducted according to documented methodologies, applying required quality control procedures 5.6. All results, noting any phenomena that may be relevant to the interpretation of results are recorded. 5.7. When result interpretation is outside parameters of authorized approval is discussed with colleague 5.8. Results are verified before releasing for clinician/client 5.9. Tested sample or sample components is/are stored according to organizational sample retention policy for retesting when requested
6. Process and interpret data	6.1. Test data are recorded by noting atypical observations 6.2. Calibration graphs are constructed, and results for samples computed from these graphs when appropriate. 6.3. Consistency of calculated values is ensured with expectations 6.4. Results are recorded and reported in accordance with enterprise procedures 6.5. Uncertainty of measurement is estimated and documented in accordance with enterprise procedures 6.6. Out of specification or atypical results are reported promptly to appropriate personnel 6.7. If faulty procedure or equipment problems have led to atypical data or results is/are identified
7. Maintain laboratory records	7.1. Approved data are entered into laboratory information management system 7.2. Confidentiality and security of enterprise information and laboratory data are maintained.

	7.3. Equipment and calibration logs are maintained in accordance with enterprise procedures
8. Maintain a safe work environment	8.1. Established safety work practices and PPE are used to ensure personal safety and that of other laboratory personnel OHS 8.2. The generation of wastes and environmental impacts are minimized 8.3. Safe collection of laboratory and hazardous waste is ensured for subsequent disposal (hazard control measures) 8.4. Equipment and reagents are stored with care as required

Variable	**Range**
Chemical principles and concepts	May include, but not limited to: • Enzymes, proteins, carbohydrate, fats • Chemical reactions involving acid/base, redox, complex • IONformation, solubility and equilibrium • Energy levels and absorption/emission spectra relevant health, safety and environment requirements
Hazards	May include, but not limited to: • Chemicals: ➢ Acids (e.g. Sulphuric, perchloric and hydrofluoric) ➢ Heavy metals and pesticides • Anions (e.g. Fluoride) • Hydrocarbons (e.g. Mono-aromatics) • Aerosols from broken centrifuge tubes, pipetting • Sharps and broken glassware • Flammable liquids and gases • Disturbance or interruption of services
Hazard control measures	May include, but not limited to: • Ensuring access to service shut-off points • Recognizing and observing hazard warnings and safety signs • Labeling of samples, reagents, aliquoted samples and Hazardous materials • Handling and storage of hazardous materials and • Equipment in accordance with labeling, MSDS and Manufacturer's instructions • Identifying and reporting operating problems or equipment Malfunctions • Cleaning and decontaminating equipment and work areas • Regularly using enterprise procedures • Using personal protective clothing and equipment, such As gloves, safety glasses and coveralls • Using containment facilities (PCII, PCIII and PCIV • Physical containment laboratories), containment • Equipment (biohazard containers, laminar flow cabinets,

	• Class I, II and III biohazard cabinets) and containment Procedures
Standards and procedures	May include, but not limited to: • Calibration and maintenance schedules • Enterprise recording and reporting procedures • Equipment manuals • Equipment startup, operation and shutdown procedures • Material Safety Data Sheets (MSDS) and safety procedures • Material, production and product specifications • National measurement regulations and guidelines • Principles of Good Laboratory Practice (GLP) • Production and laboratory schedules • Quality manuals and equipment and procedure manuals • SOPs • Waste minimization and • Safe disposal procedures
Tests	May include, but not limited to: • Blood sugar test • Liver panel (ALT (SGPT), AST(SGOT), Alkaline phosphatase, Bilirubin, Total protein, Albumine) • Renal panel (Creatinine, Urea/BUNUric Acid, • Electrolytes(Na+, K+, Cl^-, $Ca^{2+,}$ Mg^{2+}) • Lipid panel (Total cholesrole, Lower Density Lipoprotein, High Density Lipoprotein)
Records	May include, but not limited to: • Test and calibration results • Equipment use, maintenance and servicing history • Faulty or unsafe equipment
OHS	May include, but not limited to: • All operations must comply with enterprise OHS and environmental management requirements which may be imposed through state/regional or federal legislation - these requirements must not be compromised at any time • All operations assume the potentially hazardous nature of samples and require standard precautions to be applied • Where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State/regional Departments of Health or federal legislation

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Interpret test methods/procedures accurately • Prepare and test samples using procedures appropriate to the nature of sample • Perform calibration checks (if required)

	• Safely operate test equipment/instruments to enterprise standards and/or manufacturer's specification • Prepare calibration graphs and calculate results using appropriate units and precision • Apply basic theoretical knowledge to interpret gross features of data and make relevant conclusions • Identify atypical results as out of normal range or an artifact Traces and source obvious causes of an artifact • Communicate problems to a supervisor or outside service technician • Record and communicate results in accordance with enterprise procedures • Maintain security, integrity, traceability of samples, Sub-samples, test data and results and documentation.
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Concept of human physiology and anatomy of organs • Factors affection chemical reaction are identified • Chemical principles and concepts underpinning test/procedure • Purpose of the tests • Concepts of methodology • Principles and concepts related to equipment/instrument operation and testing • Function of key components of the equipment/instrument and/or reagents • Effects of modifying equipment/instrument Variable • Use of calibration procedures • Enterprise and/or legal traceability requirements • Relevant health, safety and environment requirements
Underpinning Skills	Demonstrate skills of: • Interpreting test methods and procedures • Sample preparation procedures • Performing calibration checks • Using instruments for qualitative and/or quantitative analysis • Maintaining and evaluating reagents • Troubleshooting basic equipment/method • Using calculation methods, including appropriate units, uncertainties, balancing equations, and the concentration of the solution given the chemical reaction for the titration • Preparing calibration graphs and calculating results using appropriate units and precision • Applying theoretical knowledge to interpret gross features of data and make relevant conclusions such as identifying atypical results as out of normal range or an artifact • Tracing and sourcing obvious causes of an artifact • Recording and communicating results in accordance with enterprise procedures

	• Maintaining security, integrity, traceability of samples, sub-samples, test data, results and documentation
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level IV	
Unit Title	**Prepare Histopathological Samples for Examination**
Unit Code	HLT MLT4 07 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to prepare histological and pathological samples for examination involving processing and sectioning of human tissues.

Element	Performance Criteria
1. Assemble equipment and materials	1.1. The number and type of sections required are confirmed. 1.2. ***Equipment*** are collected and the workspace arranged 1.3. Pre-use and ***safety checks*** are performed to ensure equipment is fit for purpose. 1.4. Faulty or unsafe equipment are reported to appropriate personnel 1.5. Processor reagents are inspected for deterioration and adequate volume and any items requiring replacement reported 1.6. All specified processing equipment, safety equipment, materials and containers are assembled.
2. Process tissue	2.1. Fine/Ultra Structure of tissue is prepared 2.2. Reagents are selected for tissue processing 2.3. Fixation ,dehydration , clearing and impregnation of tissue are performed 2.4. Infiltration and embedding tissue in correct orientation are performed 2.5. Sectioning of tissue is performed 2.6. Mounting of sections on microscopic slide is performed. 2.7. The procedure of tissue processing is monitored 2.8. The quality of embedded tissue is checked
3. Stain sections	3.1. Reagents specified in the method are selected 3.2. Sections are stained according to the method 3.3. Sections are examined microscopically 3.4. Mounted section is prepared permanently 3.5. Section is photographed and presented if required 3.6. Permanent labels giving specimen details are attached according to enterprise traceability requirements 3.7. Trouble shooting is performed 3.8. Security and traceability of all information are ensured

4. Maintain a safe work environment	4.1. Personal safety are ensured and cross-contamination minimized through the use of PPE. 4.2. All specimens and equipment are handled in accordance with enterprise safety protocols/procedures. 4.3. Spills are cleaned up using appropriate techniques to protect personnel, work area and environment. 4.4. Generation of waste and environmental impacts is minimized 4.5. All wastes are collected and disposed of safely 4.6. ***Hazards*** and incidents are reported to designated personnel using enterprise procedures.

Variable	**Range**
Equipment	May include, but not limited to: • Tissue processors • Microtomes and microtome knives (non-disposable or disposable) • Embedding centers • Flotation baths and drying ovens • Microtome knife sharpeners • Reagents, such as formaldehyde, ethanol, xylene, paraffin and stains • Reference material for automated and manual quality control and quality assurance systems • Fresh and fixed specimens • Computer information systems, databases, record and filing systems, including specimen accessioning
Safety protocols/practices	May include, but not limited to: • Use of MSDS(material safety data sheet) • Use of PPE, such as gloves, safety glasses, goggles, faceguards, coveralls and gowns • Use of biohazard containers and laminar flow cabinets • Correct labeling of reagents and hazardous materials • Handling and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer's instructions, and enterprise procedures and regulations • Regular cleaning and/or decontamination of equipment and work areas
Pre-use checks	May include, but not limited to: • Safety/serviceability • Cleanliness and routine maintenance
Hazards	May include, but not limited to: • Micro-organisms and agents associated with soil, air, water, blood and blood products, and human or animal tissue and fluids

	• Chemicals and stains • Aerosols • Sharps and broken glassware
Histopathological procedures	May include, but not limited to: • Cutting paraffin sections of organs, such as kidney, liver, small intestine, stomach and tongue • Staining tissue sections with Haematoxylin and Eosin (human and animal tissue)

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Process, embed and cut tissue safely to enterprise procedures • Stain sections according to enterprise procedures • Manage tasks and organize work to ensure the timely completion of tasks • Use specimens, reagents and materials economically and dispose of wastes safely • Maintain equipment, recording and reporting malfunctions appropriately • Minimize cross-contamination between specimens • Maintain traceability through all steps from receiving a specimen through to completion of a procedure • Work safely
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Functions of the components of a rotary microtome • Safety precautions relevant to tissue processing, embedding and microtomy • Importance and appropriate use of certified reference materials • Relationship of the anatomy and morphology of tissue types and the macroscopic and microscopic appearance of stained sections • Correlation between poorly maintained processing reagents and resultant tissue blocks being difficult to cut or unsuitable for cutting • Relationship between correct orientation of the tissue during embedding and ability to cut sections from surface required for subsequent microscopic examination • OHS procedures related to micrometry and handling irritating, volatile, flammable and potentially carcinogenic substances, such as formaldehyde, xylene, histoclear, ethanol and chloroform • Safe and environmentally responsible disposal of wastes • Enterprise and/or legal traceability requirements • Relevant health, safety and environment requirements
Underpinning Skills	Demonstrate kills of:

	• Processing and embedding of plant and animal tissue • Cutting of sections free of wrinkles, scores and folds and at the specified thickness to demonstrate tissue and cellular structures, granules, inclusions and organelles • Regressive haematoxylin and eosin staining • Cover slipping slides, ensuring that no air bubbles are formed and material is preserved for the life of the slide • Labeling slides clearly with case number, specimen and stain details • Maintaining equipment and recording and reporting malfunctions appropriately • Maintaining traceability through all steps from receiving a specimen through to completion of a procedure
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level IV	
Unit Title	**Implement Laboratory Quality Assurance**
Unit Code	HLT MLT4 08 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required to implement quality assurance for pre-analytical, analytical and post-analytical activities of the laboratory.

Element	Performance Criteria
1. Identify the Concept quality assurance	1.1. Concepts of quality assurance is identified 1.2. Differences of quality assurance and quality control are identified 1.3. Benefit of quality assurance program is understood 1.4. Identify ***quality elements*** in pre-analytical, analytical and post analytical laboratory process. 1.5. Laboratory path of work flow is identified
2. Prepare document and record	2.1. Document and record systems are identified. 2.2. SOP and guidelines are prepared 2.3. Records are identified, achieved and indexed according to document policy of the organization 2.4. Accomplish all laboratory activities according to quality manual
3. Implement quality Pre-analytic process	3.11 3.12 3.1 Patient and laboratory requests are properly identified. 3.2 Specimen and requests are properly labeled according to the laboratory procedures 3.3 Collect the right specimen at the right time with proper collection materials according to the laboratory procedures 3.4 Chain of custody are identified and maintained 3.5 Proper specimen are received, stored and transported according to quality policy manuals.
4. Implement quality analytic process	4.1. Internal quality controls and calibrated materials are identified 4.2. Error , accuracy and precision are differentiated 4.3. Qualitative and quantitative quality controls are defined 4.4. ***Qualitative quality control methods*** are identified for respective tests. 4.5. Internal quality control is performed 4.6. Quality control data are calculated and interpreted 4.7. ***External quality control methods*** are identified 4.8. Biological reference range and critical values are defined

5. Implement quality post- analytic process	5.1 Client test result are interpreted according to the laboratory procedures 5.2 Proper reporting system is identified according to the laboratory procedures 5.3 Releasing of test result is kept according to the laboratory procedures 5.4 Clients information and confidentiality are maintained according to the laboratory information management policy
6. Conduct Process improvement activities	6.1 Laboratory related occurrences are identified 6.2 Root cause of the occurrence are assessed 6.3 Corrective and prevented actions are taken using different tools. 6.4 Continual improvement methods are identified

Variable	**Range**
quality elements	May include, but not limited to: • Organization, Personnel, Equipment, document control, inventory control, customer survey , occurrence , information ,assessment, process control , process improvement etc
Qualitative quality control methods	May include, but not limited to: • Stains, culture and sterility , serology,
External quality control methods	May include, but not limited to: • Proficiency tests, retesting , rechecking and onsite assessment

Evidence Guide	
Critical Aspect of Competence	Demonstrate knowledge and skills to: • Understand quality assurance • Categorize quality elements in pre analytic , analytic and post analytic processes • Establish Laboratory path of work flow • Establish Document and record systems • Implement quality assurance in pre-analytic , analytic and post analytic processes • Recognize Laboratory occurrences • Perform Root cause analysis • Identify corrective and preventive actions . • Implement Plan Do, Check and Act.
Underpinning Knowledge	Demonstrate knowledge of: • Concept of quality assurance

	• Terminology of quality related • Importance of quality assurance • Quality elements in laboratory process. • Importance of path of workflow • Difference between document and record • Calibration material and quality control material • Accuracy, precision and error • Qualitative and quantitative quality controls and methods • External Quality assessment Methods • Biological range and critical values • Clients information and confidentiality • Laboratory Occurrences • Root causes analysis methods • Plan, Do, Check and Act
Underpinning Skills	Demonstrate skills to: • Path of workflow • SOPs and related documents • Patient identification and checking laboratory request • proper labeling system • Appropriate sample with respective collection materials and at the right time • • Sequence of sample custody • Sample receiving, storing and transporting • Calibration and quality control process • quality control analysis • Quality control data and interpret • Interpret External Quality Control results • Appropriate interpretation client test results • Reporting and releasing procedure • Recording of laboratory Occurrences • Perform root cause analysis • Taking corrective action for root causes • Monitoring tools to laboratory processes.
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical laboratory Techniques Level IV	
Unit Title	**Manage Community Health Service**
Unit Code	HLT MLT4 09 1121
Unit Descriptor	This unit describes the knowledge, skills and attitude required to manage health service of the area to improve quality of service

Elements	Performance Criteria
1. Follow organizational guidelines, understand health policy and service delivery system	1.1. The policy and organization of the health care system of Ethiopia is comprehended 1.2. Primary healthcare in Ethiopia is understood 1.3. Elements of primary health care are identified 1.4. ***Health service*** extension program is understood 1.5. Workplace instructions and policies are followed. 1.6. Organizational programs and procedures are supported within the job role. 1.7. Organizational resources are used for the purpose intended.
2. Plan, manage, monitor and evaluate health system	2.1. Management skills required to bring about efficient health care system are dealt with 2.2. Health programs are planned 2.3. Resources for health care are managed 2.4. Individual and team capacity is developed 2.5. Issues raised through participation and consultation are resolved promptly and effectively 2.6. Health service monitoring and evaluation mechanisms are developed
3. Lead and build individual's and team's capacity	3.1. Self-improvement areas are identified based on individual's self-performance evaluation. 3.2. Learning and development needs are systematically identified and implemented in line with organizational requirements 3.3. Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of competence standards 3.4. Workplace learning opportunities and coaching/ mentoring are provided to facilitate individual and team achievement of

	competencies 3.5. Joint action plans are developed. 3.6. Duties and responsibilities are allocated based on the skills, knowledge and aptitude required to properly undertake the assigned task as well as considering individual's preference, 3.7. Collaborative efforts are made to attain organizational goals 3.8. Feedback from individuals or teams is used to identify challenges, develop interventional strategies, and implement them to bring about improvement

Variable	**Range**
Health service	Is defined as service provided to the community to: • promote health and prevent disease • cure illness

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Describe national health care policy • Describe primary Health Care • Plan and manage health extension service • Plan and manage individuals and teams • Apply principles of health care ethics
Required Knowledge and Attitudes	Demonstrate knowledge of: • National and local health goals, targets and priorities • Evidence-based practice • Equity issues in population health • Basic principles of leadership • Principles of health care ethics
Required Skills	Demonstrate skills to: • Plan and manage health extension service • Manage resources • Build capacity of teams and individuals
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Medical Laboratory Techniques Level IV	
Unit Title	**Prevent and Eliminate MUDA**
Unit Code	HLT MLT4 10 1121
Unit Descriptor	This unit covers the knowledge, skills and attitude required by a worker to prevent and eliminate MUDA/wastes in his/her workplace by applying scientific problem-solving techniques and tools to enhance quality, productivity and other kaizen elements on continual basis. It covers responsibility for the day-to-day operation of the work and ensures Kaizen Elements are continuously improved and institutionalized.

Element	Performance Criteria
1. Prepare for work.	1.1. Work instructions are used to determine job requirements, including method, material and equipment. 1.2. Job specifications are read and interpreted following working manual. 1.3. ***OHS requirements***, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work. 1.4. Appropriate material is selected for work. 1.5. ***Safety equipment and tools*** are identified and checked for safe and effective operation.
2. Identify MUDA and problem	2.1 Plan of MUDA and problem identification is prepared and implemented. 2.2 Causes and effects of MUDA are discussed. 2.3 All possible problems related to the process /Kaizen elements are listed using ***statistical tools and techniques***. 2.4 All possible problems related to kaizen elements are identified 2.5 are used to draw and analyze current and listed on Visual Management Board/Kaizen Board. 2.6 ***Tools and techniques*** situation of the work place. 2.7 Wastes/MUDA are identified and measured based on ***relevant procedures***. 2.8 Identified and measured wastes are reported to relevant personnel.
3. Analyze causes of a problem.	3.1 All possible causes of a problem are listed. 3.2 Cause relationships are analyzed using***4M1E***. 3.3 Causes of the problems are identified. 3.4 The root cause which is most directly related to the problem is selected. 3.5 All possible ways are listed using ***creative idea generation*** to

	eliminate the most critical root cause. 3.6 The suggested solutions are carefully tested and evaluated for potential complications. 3.7 Detailed summaries of the action plan are prepared to implement the suggested solution.
4. Eliminate MUDA and Assess effectiveness of the solution.	4.1. Plan of MUDA elimination is prepared and implemented by ***medium KPT*** members. 4.2. Necessary attitude and the ***ten basic principles*** for improvement are adopted to eliminate waste/MUDA. 4.3. Tools and techniques are used to eliminate wastes/MUDA based on the procedures and OHS. 4.4. Wastes/MUDA are reduced and eliminated in accordance with OHS and organizational requirements. 4.5. ***Tangible and intangible results*** are identified. 4.6. Tangible results are compared with targets using ***various types of diagrams***. 4.7. Improvements gained by elimination of waste/MUDA are reported to relevant bodies.
5. Prevent occurrence of wastes and sustain operation.	5.1. Plan of MUDA prevention is prepared and implemented. 5.2. Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and procurement are discussed and prepared. 5.3. Occurrences of wastes/MUDA are prevented by using ***visual and auditory control methods***. 5.4. Waste-free workplace is created using ***5W and 1H***sheet. 5.5. The completion of required operation is done in accordance with standard procedures and practices. 5.6. The updating of standard procedures and practices is facilitated. 5.7. The capability of the work team that aligns with the requirements of the procedure is ensured and trained on the new ***Standard Operating Procedures (SOPs)***.

Variable	**Range**
OHS requirements	May include, but not limited to: • Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of firefighting equipment, enterprise first aid, hazard control and hazardous materials and substances. • PPE are to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices.

	• Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization. • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
Safety equipment and tools	May include, but not limited to: • Dust masks/goggles • Glove • Working cloth • First aid and • Safety shoes
Statistical tools and techniques	May include, but not limited to: • 7 QC tools May include, but not limited to: ➢ Stratification ➢ Pareto Diagram ➢ Cause and Effect Diagram ➢ Check Sheet ➢ Control Chart/Graph ➢ Histogram and Scatter Diagram • QC techniques May include, but not limited to: ➢ Brain storming ➢ Why analysis ➢ What if analysis ➢ 5W1H
Tools and techniques	May include, but not limited to: • Plant Layout • Process flow • Other Analysis tools • Do time study by work element • Measure Travel distance • Take a photo of workplace • Measure Total steps • Make list of items/products, who produces them and who uses them & those in warehouses, storages etc. • Focal points to Check and find out existing problems • 5S • Layout improvement • Brainstorming • Andon

	• U-line • In-lining • Unification • Multi-process handling &Multi-skilled operators • A.B. control (Two point control) • Cell production line • TPM (Total Productive Maintenance)
Relevant procedures	May include, but not limited to: • Make waste visible • Be conscious of the waste • Be accountable for the waste and measure the waste.
4M1E	May include, but not limited to: • Man • Machine • Method Material and Environment
Creative idea generation	May include, but not limited to: • Brainstorming • Exploring and examining ideas in varied ways • Elaborating and extrapolating • Conceptualizing
Medium KPT	May include, but not limited to: • 5S • 4M (Machine, Method, Material and Man) • 4p (Policy, Procedures, People and Plant) • PDCA cycle Basics of IE tools and techniques
The ten basic principles for improvement	May include, but not limited to: • Throw out all of your fixed ideas about how to do things. • Think of how the new method will work- not how it won. • Do not accept excuses. Totally deny the status quo. • Do not seek perfection. A 5o percent implementation rate is fine as long as it is done on the spot. • Correct mistakes the moment they are found. • Do not spend a lot of money on improvements. • Problems give you a chance to use your brain. • Ask “why?” At least five times until you find the ultimate cause. • Ten people’s ideas are better than one person’s. • Improvement knows no limits.
Tangible and intangible results	May include, but not limited to:

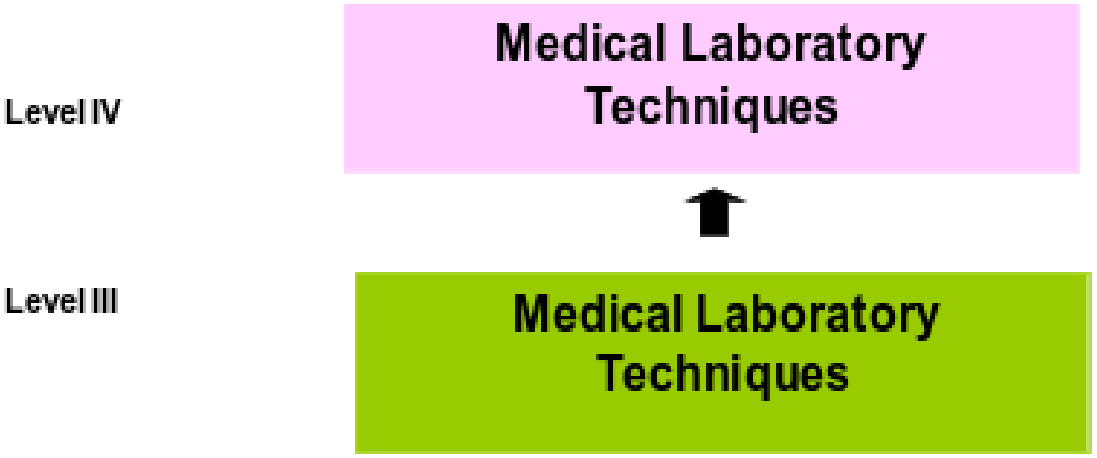
	• Tangible result may include quantifiable data • Intangible result may include qualitative data
various types of diagrams.	May include, but not limited to: • Line graph • Bar graph • Pie-chart • Scatter diagrams • Affinity diagrams
Visual and auditory control methods	May include, but not limited to: • Red Tagging • Sign boards • Outlining • And ones • Kanban, etc.
5W and 1H	May include, but not limited to: • Who • What • Where • When • Why and • How
Standard Operating Procedures (SOPs).	May include, but not limited to: • The customer demands • The most efficient work routine (steps) • The cycle times required to complete work elements • All process quality checks required to minimize defects/errors • The exact amount of work in process required

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: • Discuss why wastes occur in the workplace • Discuss causes and effects of wastes/MUDA in the workplace • Analyze the current situation of the workplace by using appropriate tools and techniques • Identify, measure, eliminate and prevent occurrence of wastes by using appropriate tools and techniques • Use 5W and 1H sheet to prevent • Detect non-conforming products/services in the work area • Apply effective problem-solving approaches/strategies. • Implement and monitor improved practices and procedures

	• Apply statistical quality control tools and techniques.
Required Knowledge and Attitude	Demonstrate knowledge of: • Targets of customers and manufacturer/service provider • Traditional and kaizen thinking of price setting • Kaizen thinking in relation to targets of manufacturer/service provider and customer • value • The three categories of operations • the 3“MU” • wastes occur in the workplace • The 7 types of MUDA • QC story/PDCA cycle/ • QC story/ Problem solving steps • QCC techniques • 7 QC tools • The Benefits of identifying and eliminating waste • Causes and effects of 7 MUDA • Procedures to identify MUDA • Necessary attitude and the ten basic principles for improvement • Procedures to eliminate MUDA • Prevention of wastes • Methods of waste prevention • Definition and purpose of standardization • Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and procurement • Methods of visual and auditory control • TPM concept and its pillars. • Relevant OHS and environment requirements • Method and Lines of communication • Methods of making/recommending improvements. • Reporting procedures • Workplace procedures associated with the candidate's regular technical duties • organizational structure of the enterprise
Required Skills	Demonstrate skills to: • Draw & analyze current situation of the work place • Use measurement apparatus (stop watch, tape, etc.) • Calculate volume and area • Apply statistical analysis tools • Use and follow checklists to identify, measure and eliminate

	wastes/MUDA • Identify and measure wastes/MUDA in accordance with OHS and procedures • Use tools and techniques to eliminate wastes/MUDA in accordance with OHS procedure. • Apply 5W and 1H sheet • Update and use standard procedures for completion of required operation • Apply Visual Management Board/Kaizen Board. • Detect non-conforming products or services in the work area • Work with others • Read and interpret documents • Observe situations • Solve problems • Communicate information • Gather evidence by using different means • Report activities and results using report formats • Implement and monitor improved practices and procedures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

MEDICAL LABORATORY



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MINISTRY OF HEALTH-ETHIOPIA

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This occupational standard was revised in November 2021 at Adama, Ethiopia.

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