

THE UNITED REPUBLIC OF TANZANIA



MINISTRY OF HEALTH AND SOCIAL WELFARE

Curriculum for Basic Technician Certificate in Clinical Medicine

NTA LEVEL 4

**Department of Human Resource Development
6 Samora Avenue
11478, Dar es Salaam.**

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LIST OF ABBREVIATIONS

AFB	-	Acid Fast Bacilli
AIDS	-	Acquired Immunodeficiency Syndrome
CA	-	Continuous Assessment
CDC	-	Centre for Disease Control
CM	-	Clinical Medicine
CMT	-	Clinical Medicine Technician
CPR	-	Cardiac Pulmonary Resuscitation
CSEE	-	Certificate of Secondary Examination Education
DACUM	-	Developing A Curriculum
GBV	-	Gender Based Violence
VAC	-	Violence against Children
PMTCT	-	Prevention of Mother to Child Transmission
GPA	-	Grade Point Average
HIV	-	Human Immunodeficiency Virus
Hb	-	Haemoglobin
HAIs	-	Health related acquired infections
HMIS	-	Health Management Information System
I-TECH	-	International Training and Education Centre for health
ICT	-	Information Communication Technology
IPC	-	Infection Prevention and Control
IT	-	Information Technology
MDGs	-	Millennium Development Goals

MKUKUTA	-	Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania
MOHSW	-	Ministry of Health and Social Welfare
MTUHA	-	Mfumo wa Taarifa za Uendeshaji Hudumaza Afya
NACTE	-	National Council for Technical Education
NTA	-	National Technical Awards
OSCE	-	Objective Structured Clinical Examination
OSPE	-	Objective Structured Practical Examination
OHP	-	Over Head Projector
PHCDP	-	Primary Health Care Development Programme
PHC	-	Primary Health Care
PPE	-	Personal Protective Equipment
Rh	-	Rhesus
ES	-	End Semester Examination
TQM	-	Total Quality Management
WHO	-	World Health Organization

EXECUTIVE SUMMARY

Adoption and implementation of the National Technical Awards (NTA) system is a mandatory requirement for technical training programmes to be accredited by the National Council for Technical Education (NACTE).

The Basic Technician Certificate course in Clinical Medicine is a two-semester programme. This has been developed to suit the needs of the health sector, the labour market demands, legal and professional needs that exist in our country. It is one of the initiatives by the Government to modernise qualifications within the health sector and optimise transferability within and across sectors and disciplines.

Development of this programme is aimed at rewarding individual achievement in learning and competence gained in a variety of different ways and contexts. The introduction of this programme is geared towards increasing productivity in training institutions, addressing skills gaps and shortages in workplaces, providing a climbing ladder for higher skills opportunities and achieving more responsive education and training system, aligned with health sector employment needs.

The philosophy of developing NTA in Clinical Medicine programme is to provide a fair and well developed ‘stairway’ in technical education that opens the possibility of moving along the NTA qualification framework and receive appropriate recognition, which is currently limited. It is thus intended for producing creative, innovative and flexible graduates who will contribute in the national development schemes in the health sector by utilising their competences in the community.

NTA level 4 has 14 modules with a total of 120 credits that are spread over in two semesters. Each semester has 22 weeks, whereas 20 weeks will be for teaching and learning and 2 weeks for examinations.

Students will be required to practice in clinical areas under supervision as an important learning method to gain hands-on experience. They will also fill in their practical procedure books.

Students will be assessed throughout the course using assignments, written tests, oral questioning, clinical examinations, and OSCE/OSPE. These will be conducted during continuous assessment and end of semester examinations.

ACKNOWLEDGEMENT

This competence-based curriculum has been reviewed to accommodate societal needs and new technological advancement in management of diseases. The review process also addressed the challenges that have been encountered during the implementation of the former curricula so as to ensure smooth running of Education and training in the Health training institutions. It allows an entry point for pre-service students to both Certificate and Diploma in Clinical Medicine based on the admission requirements. The program will take one year comprising of two semesters with a total of 14 modules

The review of this curriculum is largely a collaborative effort of the Ministry of Health and Social Welfare (MOHSW), International Training and Education Centre for Health (I-TECH), the National Council for Technical Education (NACTE), and expertise from various professionals and tutors from Health Training Institutions.

Particular thanks are due to Dr Bumi L.A. Mwamasage, the Assistant Director for Allied Health training, Dr. Mabula M. Ndimila, and Mr. Dennis Busuguli, Coordinators of Allied Health Training, who organised this activity.

It is also a pleasure of MOHSW to acknowledge tutors from Training Institutions, experts from various departments of the MOHSW, NACTE and I-TECH who worked tirelessly from the initial inception to the completion of this curriculum.

The MOHSW would like to thank in particular medical professionals, trainers, professional registration bodies, employers, and members of society for their keen contributions and support made during the entire process.

The list of names of these experts albeit in no particular order is attached here to and I crave leave for it to be construed as part of this curriculum.

Many thanks to Dr John Mosha, Dr Violet Kiango, Dr Fadhili Lyimo, Dr Stephen Saul and Dr Erhad Bilaro who formed Task force for editorial work to ensure that all jointly agreed stakeholder's suggestions, have been accommodated to the curricula.

Finally, I sincerely thank Centre for Disease Control (CDC) Tanzania for financial support through I-TECH toward realization of this curriculum.

Dr. Otilia F Gowele

DIRECTOR OF HUMAN RESOURCE DEVELOPMENT

PART I

1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION

Act of Parliament No. 9 of 1997 established the National Council for Technical Education (NACTE). The Act provides a legal framework for the Council to build an efficient national qualification framework for ensuring that products from technical institutions are of high quality and respond to changing needs of the country as well as technological innovations in the world.

One of the accreditation requirement is that institutions should offer appropriate academic level programmes in recognised field of study that culminate in identified student competences leading to the National Technical Awards (NTA). Institutions are therefore required to ensure that training programmes are supported by curricula, which are developed according to NACTE requirements. The requirements include; situational analysis, developing the DACUM chart and competence-based learning outcomes, formulating modules and adopting a semester system.

The competence-based curriculum was first developed in 2007. Since then many changes have taken place especially in the area of socioeconomic, technological needs and advancement in the management of diseases.

In response to the changes and NACTE requirement to review a curriculum after every five years, the MoHSW recognised the need for reviewing the Basic Technician curriculum in Clinical Medicine.

1.2 VISION AND MISSION OF THE TRAINING PROGRAMME:

1.2.1 Vision:

To have adequate trained and developed work force who will cope with existing and emerging health issues.

1.2.2 Mission:

To establish conducive and sustainable training environment that will enable graduates to perform competently at their relevant levels and attain higher levels of knowledge, skills and attitudes in clinical medicine and health sciences.

1.3 PROGRAMME RATIONALE AND PHILOSOPHY

1.3.1 Programme Rationale

The main objective of the National Health Policy is to improve the health and well-being of all Tanzanians, with a focus on those most at risk. Also encourages the health system to be more responsive to the needs of the people.

According to WHO (2006 World Health Report) skilled and motivated health workers are crucially important for producing good health through the performance of health systems as they constitute a significant share of the labour force and perform key social roles in all societies.

Primary Health Care Development Programme (PHCDP) (2007-15) needs the nation to strengthen and expand health services to the village level. This is best achieved if the Nation has appropriately trained and adequate work force that can be deployed in the health facilities to provide quality health services.

Tanzania Vision 2025, National Strategy for Economic Growth and Poverty Reduction (NSEGPR/MKUKUTA), Health for All, Primary Health Care (PHC) and Millennium Development Goals (MDGs) will be achieved in the presence of appropriately prepared and deployed health workforce. The training of health workers is therefore crucial for achieving equity-oriented national health goals.

To achieve this goal, MOHSW in collaboration with I-TECH identified various competences that were not adequately addressed in the Clinical Assistants and Clinical officers' curricula. In order to make the competences effectively taught in the technical institutions, they were to be integrated into the curriculum. The competences that were earmarked included; Family Planning (FP), Gender Based Violence (GBV), Violence against Children (VAC), Voluntary Medical Male Circumcision (VMMC), Prevention of Mother to Child Transmission (PMTCT) and Early Infant Medical Male Circumcision (EIMMC).

The rationale for this programme is to produce competent health workers to address shortages of skilled staff at workplaces, provide a climbing ladder for higher skills opportunities and achieve more responsive education and training system aligned with health sector employment needs.

This programme has been developed in line with the above considerations, which provides for a creation of a life-long learning culture, modularisation, credit accumulation and scalability, leading to acquisition of more knowledge, skills and wider understanding in health care practice.

The programme takes into account the question of employability and acceptance into further training levels, at the same time enabling one to bear the costs of training.

1.3.2 Programme Philosophy

This programme is geared towards producing innovative, creative and flexible graduates who will cope with the dynamic changes of technology and socio-economic needs. To enhance this philosophy the programme is designed and developed such that it:

- Provides a sound foundation in medical sciences and develops ability in communication skills so as to give the graduates an opportunity for further training.
- Allows for development of skilled and professional career education with a strong base in clinical medicine and other allied health disciplines.
- Offers a wide base of inter-disciplinary aspects in the fields of health with a foundation in life skills, Information and Communication Technologies (ICT).
- Enhances graduates' awareness towards professional, legal and socio-economic influences in the delivery of health care services.
- Enables graduates to be self-confident and acquire competences that solve day-to-day problems.
- Satisfies the specified standards in line with the National Technical Awards system.
- Imparts creativeness and strong ability for the graduates to undertake given tasks competently.

It is, therefore, expected that the graduates from this programme will have aspirations to become professionals.

1.4 OBJECTIVES OF THE PROGRAMME

The general objective and specific objectives of the programme are as detailed herein.

1.4.1 General Objective

To produce competent technicians in clinical medicine who will work effectively at different work places.

1.4.2 Specific objectives:

The specific objectives of this program are to;

- (a) Train clinician who will be able to provide preventive and rehabilitative services
- (b) Facilitate trainee to acquire competence in diagnostic and curative services
- (c) Prepare a technician who will carry out administrative services at primary health facility.
- (d) Provide a professional career development with the stronger base in clinical medicine.
- (e) Create awareness toward profession, legal and socioeconomic influences in the delivery of health care services.

1.5 ADMISSION REQUIREMENTS

Admission to the program will be open to candidates who have a Certificate of Secondary Education Examination (CSEE). Direct entrants to an Ordinary Diploma Course (Clinical Officer) must have a minimum of 'C' credits in Biology and Chemistry, and a 'D' pass in Physics, English and Mathematics.

Students joining certificate course (Clinical Assistant) must have a minimum of 'D' pass in Physics, Chemistry, Biology, English and Mathematics

NB: Admission should last for 3 weeks from the date of commencement of each academic calendar.

1.6 PROGRAMME STRUCTURE

1.6.1 Overall Structure for NTA Level 4

The NTA level 4 has a total of fourteen (14) modules that will be covered in one academic year. This level has a total of 44 weeks in academic year and divided into two semesters. Semester I has 20 weeks of teaching and learning and 2 weeks for examination. Semester II has 20 weeks of teaching and learning and 2 weeks for examination. There are eight (8) modules in semester I and six (6) modules in semester II.

1.6.2 Methods of study

In all modules, the programme enhances a wide range of study methods and approaches. These include lecture discussion, small group discussion, case studies, role plays, tutorials, assignments, practical training including demonstration, laboratory/ward attachment and study tours.

Module Coding

The system of coding has adopted a combination of letters and numbers, which have specific meaning. For example Anatomy and Physiology I module is coded as CMT04102 where:

- CM** Represents the first two letters of the department “Clinical Medicine”,
- T** Represent Technician award,
- 04** Represents the respective NTA Level,
- 1** Indicates the first semester in which the module is conducted,
- 02** Represents the serial number to which a particular module is assigned in the respective Department.

1.6.4 Table 1: Distribution of Modules in the Semester

CODE	MODULE	SEMESTER I	SEMESTER II
CMT04101	Communication skills	√	
CMT04102	Anatomy and Physiology I	√	
CMT04103	Environmental Health	√	
CMT04104	Microbiology, parasitology and Entomology	√	
CMT04105	Medical Ethics and professionalism	√	
CMT04106	Nutrition	√	
CMT04107	Resource management	√	
CMT04108	Entrepreneurship and life skills	√	
CMT04209	Clinical Laboratory		√
CMT04210	Anatomy and Physiology II		√
CMT04211	Epidemiology and Biostatistics		√
CMT04212	Computer application		√
CMT04213	Clinical Skills		√
CMT04214	Pathology		√

Scheme of Study

Table 2: Semester I Modules

Code	Module Title	Scheme of Study (Hours per week)			Total hrs/week	Credit
		Lecture discussion	Practical/ Skill lab/Tutorial	Assignment		
CMT04101	Communication skills	2	½	½	3	5
CMT04102	Anatomy and Physiology I	4	2	1	7	14
CMT04103	Environmental Health	2	1 ½	½	4	7
CMT04104	Microbiology, parasitology and Entomology	2	2 ½	½	5	10
CMT04105	Medical Ethics and professionalism	2	0	1	3	5
CMT04106	Nutrition	1	1	1	3	5
CMT04107	Resource Management	1	½	½	2	4
CMT04108	Entrepreneurship and life skills	2	0	1	3	6
	SUBTOTAL	16	8	6	30	56

Total instruction hours /week = **30**

1.6.5.2 Table 3: Semester II Modules

Code	Module Title	Scheme of Study (Hours per week)				Credit
		Lecture discussion	Practical/skill Lab	Assignment	Total hrs/week	
CMT04209	Basic Clinical Laboratory	1	2	1	4	8
CMT04210	Anatomy and Physiology II	4	2	1	7	14
CMT04211	Epidemiology, Biostatistics and emergency preparedness	2	2	1	5	10
CMT04212	Computer application	1	2	1	4	8
CMT04213	Clinical Skills	2	4	1	7	14
CMT04214	Pathology	4	0	1	5	10
	TOTAL	14	12	6	32	64

Total instruction hours /week = 32

1.7 ASSESSMENT

The conduct and management of continuous assessments, end of semester and supplementary examinations shall be done in accordance to regulations stipulated in the MoHSW Examination Regulations and Guidelines for HTIs.

1.7.1 Objective of Assessment

The objective of assessment is to set a comprehensive system of measuring the achievement of the learning outcomes. It provides a yardstick for which the expected outcomes and benchmarking items are evaluated.

1.7.2 Purpose of Assessment

To provide student with feedback during the process of learning and teaching improve teaching and student learning, ensure that students have sufficient opportunity and adequate support to achieve learning outcomes outlined in the curriculum and assist in grading students for the purpose of accreditation and certification

1.7.3 Assessment Philosophy

Assessment is an integral part of the learning process and it must support and complete the learning strategies in order to achieve the required outcomes. Assessment in particular, must reflect the required progression and be sensitive to the range of key skills developed.

1.7.4 Principles of Assessment

Assessment of students will:

- (a) Reflect the aims and objectives of the overall scheme, the route way and the learning outcomes of the module.
- (b) Be designed to assist student learning, in particular their development as self-directed learners and the acquisition of key skills.
- (c) Be varied, to facilitate motivation and in recognition of the need to adopt approaches, which enable students to demonstrate that, they have fulfilled learning objectives.
- (d) Reflect progression through studying modules and semesters, with increasingly more complex methods being associated with higher order skills.

1.7.5 Assessment Methods

The following assessment methods will be used:

1.7.5.1 Assignments

The objective of assignments is to reinforce the learning process by involving the participation of students in finding solutions to given questions or problems, that require decision-making. They may be administered in a form of written work, practical exercises that are done individually or in a group, so as to enhance self-development. For each module appropriate assessment methods and instruments will be indicated.

1.7.5.2 Practical/Clinical examination

Practical/ Clinical examination is intended to allow the student to participate in undertaking a particular procedure individually. The learner should demonstrate the ability to observe, carry out a procedure and deduce results. It generally reinforces the learning process and develops the learners' practical ability. It measures the capability of learners through actual doing of a particular task or skills.

1.7.5.3 Written examination

The intention of written examination is to measure the theoretical ability of students and evaluate performance in written work.

1.7.5.4 End of semester examination

End of semester examination will be conducted at the end of each semester as described in specific modules.

1.7.6 Management of Assessment

There shall be continuous assessments and end of semester examinations

1.7.6.1 Continuous assessments:

The management of assessment shall be organized and implemented according to the MoHSW Examination Regulations and guidelines. Students in their respective institutions can access these regulations. Students shall also be given an orientation on assessment before the respective assessment activities.

- (a) Continuous assessments shall comprise of three components; assignments, theory and oral/practical/clinical examination.
- (b) There shall be a minimum of two (2) assignments, two (2) theory test and one oral/practical/clinical examinations for each module during a semester
- (c) Theory test shall be conducted for duration of two hours.
- (d) Clinical examination shall be conducted for a duration of 1 hour; clerking shall take 40 minutes and 20 minutes for summary presentation and discussion.
- (e) A candidate must have an average of at least 50% pass mark in each component of the continuous assessment (written, assignment, clinical/practical/oral) before appearing for end of semester examination.
- (f) A candidate failing to achieve an average pass mark of at least 50% in each component of the module shall be given a supplementary on the respective component.
- (g) No candidate(s) shall be allowed to sit for end of semester examination without successful completion of continuous assessment.
- (h) The marks obtained after passing a supplementary of a component in CA shall be graded 50% regardless of the actual score.
- (i) All assessments including 1st sitting and supplementary shall be completed two weeks before the end of semester examination.
- (j) Continuous assessment shall contribute 40% to the final score of the module at the end of semester. The distribution of percentage is elaborated in module description part II.

1.7.6.2 End of semester Examination.

Before a candidate is allowed to sit for end of semester examination, He/she must fulfil the requirement as per examination regulations for training institution provided by MoHSW.

It is mandatory that every student must sit for end of semester examination, failure to do so without genuine and evidence based reason shall lead to student discontinuation from the course.

1.7.6.3 Eligibility to enter semester II

The candidate shall be allowed to enter semester II after obtaining a GPA of 2.0 or above and passed 50% of the examined modules. A candidate who has failed any component of the module during end semester examination will be allowed to continue with semester II and appear for supplementary examination three weeks after declaration of results.

1.7.6.4 Declaration of examination results

- a) The candidate shall be declared 'pass' after obtaining a minimum of 50% in each module for both written and practical/ clinical end of semester examinations with GPA of 2.0 or above
- b) A candidate shall be declared failed if he/she
 - i. Has GPA less than 2.0
 - ii. Has GPA of 2.0 or above but failed either written or clinical/practical examination of any module
- c) The results of candidate shall be declare incomplete if she/he did not attempt some of the required module examinations at the end of semester
- d) A candidate shall be allowed to supplement end of semester examination if her/his semester GPA is 2.0 or above and has passed at least 50% of total modules in the Semester.
- e) A candidate who failed written or clinical/practical examination in a module shall supplement both written and clinical/practical examination
- f) A candidate who failed written or clinical/practical examination shall do supplementary examination six weeks after declaration of results
- g) A candidate who fails supplementary examinations shall repeat the failed module(s) when next offered.
- h) A candidate who fails a repeated module(s) shall be discontinued from studies.

1.7.6.5 Disposal of a Failed Candidate

A candidate shall be discontinued from studies if has semester GPA of;

- i. Less than 2.0
- ii. Two (2.0) or above **BUT** has failed more than 50% of the total number of modules in the end of semester examination

1.7.6.6 Assessment plan, recording and reporting

- (a) Assessment plan showing abilities and outcomes to be assessed, tools or instruments for assessment of each module shall be developed.
- (b) Assessment record and reporting system shall follow NACTE procedures to maintain assessment data, for purpose of feedback of assessment results and adherence to assessment regulations.

1.7.6.7 Examination irregularities

Any detected examination misconduct shall be dealt according to MoHSW examination regulation for HTIs.

**1.7.6.8 Distribution of marks for Continuous assessment and End of semester examination
Table 4 A: Semester I**

Code	Module title	Weighting for continuous assessment 40% and End of Semester examination is 60%								
		CA 40%				ESE 60%				
		Written test	Oral exam	Clinical /OSC E/field report	Assignment report	Written test	Oral exam	Clinical /OSCE	Assignment report	TOTAL
CMT 04101	Communication Skills	20	-	15	5	30	-	30	-	100
CMT 04102	Anatomy and Physiology I	20	-	15	5	30	-	30	-	100
CMT 04103	Environmental Health	25	10	-	5	40	20	-	-	100
CMT 04104	Microbiology, Parasitology and Medical Entomology	25	10	-	5	40	20	-	-	100
CMT04105	Medical Ethics and professionalism	25	10	-	5	40	20	-	-	100
CMT04106	Nutrition	25	10	-	5	40	20	-	-	100
CMT04107	Resource management	25	10	-	5	40	20	-	-	100
CMT04108	Entrepreneurship and life skills	25	10	-	5	40	20	-	-	100

Table 4 B: Semester II

Code	Module title	Weighting for continuous assessment 40% and End of Semester examination is 60%								
		CA 40%				ESE 60%				TOTAL
		Written test	Oral exam	Clinical /OSC E/field report	Assignment report	Written test	Oral exam	Clinical /OSCE	Assignment report	
CMT 04209	Basic Clinical Laboratory	15	-	20	5	25	-	35	-	100
CMT 04210	Anatomy and Physiology II	20	-	15	5	30	-	30	-	100
CMT 04211	Epidemiology , Biostatistics and emergency preparedness	20	-	15	5	30	-	30	-	100
CMT 04212	Computer Application	15	-	20	5	25	-	35	-	100
CMT 04213	Clinical Skills	10	-	25	5	20	-	40	-	100
CMT 04214	Pathology	25	10	-	5	40	20	-	-	100

1.8 GRADING SYSTEM

1.8.1 Score ranges and grading system

For NTA level 4, all assessed work will be marked according to the following grading system which specify range of scores for different grades, points and their definitions.

Table5: The Range of Scores for different grades, points and their definitions

S/N	SCORE RANGE	GRADE	POINTS	DEFINITION
1	80 – 100	A	4	Excellent
2	65 – 79	B	3	Good
3	50 – 64	C	2	Satisfactory
4	40- 49	D	1	Poor
5	0.0 – 39	F	0	Failure
6	-	I	-	Incomplete
7	0	Q	-	Disqualification

1.8.2 Computation of GPA

GPA shall be computed from grades achieved by students in each semester by combining results of CA and ES examinations.

Divide the total of number of grade points earned by the student for that module times credits assigned to the module by the total number of credits for module examined. For example

Semester GPA for each candidate is calculated as follows:

$$\text{Semester GPA} = \frac{\text{Sum (P x N)}}{\text{Sum of N}}$$

Sum of N

P - Grade point assigned to a letter grade scored by the student in a module

N – Number of credits associated with the module in a semester

Cumulative GPA for each candidate is calculated as follows:

$$\text{Cumulative GPA} = \frac{\text{Sum of } (P_1 \times N_1) + (P_2 \times N_2)}{\text{Sum of } N_1 + N_2}$$

P - Grade point assigned to a letter grade scored by the student in a module

N - Number of credits associated with the module (**N₁** and **N₂**) number of credits for semester 1 and 2 respectively

1.8.3 Classification of Awards

Following completion of all modules in a given semester the performance shall be computed to obtain Grade Points Average (GPA) achieved by the respective candidate. GPA shall be calculated at the end of each semester and when the candidate is liable for offer of award a cumulative GPA will be computed and awarded accordingly.

The Grade Point Average (GPA) computed from credits and grade weights shall be classified as shown below:

CLASS OF AWARD	CUMMULATIVE GPA
First class	3.5 - 4.0
Second class	3.0 – 3.4
Pass	2.0 – 2.9

PART II

2.0 CURRICULUM DETAILS

2.1 Title of the Qualification: Basic Technician Certificate in Clinical Medicine

2.2 Purpose of Qualification: This qualification is intended for persons who will assist health workers in provision of preventive, curative, diagnostic and administrative services in health care settings.

2.3 NTA Level: 4

2.4 Competence level Descriptor: The holder of the qualification will be able to apply skills, appropriate attitudes and knowledge at routine level.

2.5 Minimum Credits at this Level: 120

2.6 Credits from Lowest Level: NIL

2.7 Total credits at this level: 120

2.8 Date the Qualification Standard was Last Reviewed: January, 2015

2.9 PRINCIPAL LEARNING OUTCOMES, CREDIT VALUES AND ASSESSMENT CRITERIA

Table 6: Principal Learning Outcomes, Credit Values and Assessment criteria

Principal learning outcome	Credit Values	Assessment Criteria
1. Apply knowledge and skills of recordkeeping to collect revenue and manage materials.	8	(a) Revenue is collected according to financial guidelines
		(b) Material and supplies are stored according to guidelines
		(c) Financial records are kept according to regulations
		(d) Material and supplies records are managed according to existing protocols
2. Apply principles of Communication, ethics, and professionalism to improve quality of health services	17	(a) Health facility physical environment is maintained at a good state
		(b) Professionalism and good communication are observed properly in attending clients
		(c) Clients satisfaction is correctly evaluated
		(d) Human rights principles are observed in provision of health care
3. Apply basic biostatistics in collecting and managing health and health related data.	17	(a) Data collection tools are correctly utilized
		(b) Data compilation is done according to guidelines
		(c) Data is stored safely according to existing protocols
		(d) Health data is analysed according to principal and guidelines
		(e) Reports are prepared according to guidelines
		(f) Basic principles of data management are correctly applied in data utilization
4. Apply knowledge of biomedical sciences and clinical skills to manage diseases	38	(a) Patient history is taken according to principles
		(b) Physical examination is performed according to principles
		(c) Disease conditions are correctly diagnosed
		(d) Infection prevention and control measures are observed according to guidelines
5. Apply basic knowledge of abnormal tissue changes	34	(a) Basic knowledge of tissue changes utilized for disease detection
		(b) Knowledge of micro-organism correctly applied

Principal learning outcome	Credit Values	Assessment Criteria
and diagnostic methods to detect diseases.		to detect diseases
		(c) Diagnostic methods applied according to protocol to detect diseases
		(d) Laboratory investigations are performed according to standard operating procedures
6. Apply basic knowledge of entrepreneurship and life skills to deal with life challenges.	6	(a) Entrepreneurship skills are employ in improving quality of life
		(b) Life skills are applied in improving quality of services
		(c) Customer care principals are employed to improve quality of services
Total Credits	120	

2.10 PRINCIPAL LEARNING OUTCOMES AND ENABLING OUTCOMES

Table 7: Principal Learning Outcomes and Enabling Outcomes

SN	PRINCIPLE LEARNING OUTCOME	S/N	ENABLING OUTCOME
1	Apply knowledge and skills of recordkeeping to collect revenue and manage materials.	1.1	Employ basic principles of revenue collection and billing procedures in managing finance
		1.2	Utilize principles of resource management to manage materials and supplies
		1.3	Utilize computer software to manage finance, material and supplies.
2	Apply principles of Communication, ethics, and professionalism to improve quality of health services	2.1	Apply principles of communication in delivering quality health services
		2.2	Apply professional and ethical code of conduct in providing quality health services.
		2.3	Describe ethical dilemmas and legal issues governing provision of health services
3	Apply knowledge of Epidemiology and basic biostatistics in managing health and health related data.	3.1	Apply knowledge of epidemiology to manage disease in a population
		3.2	Apply Information Communication Technology in managing health data
		3.3	Utilize principles of data management in collecting, analyzing and dissemination of healthcare data
		3.4	Apply knowledge of emergency preparedness in preventing and managing disaster
4	Apply knowledge of biomedical sciences and clinical skills to manage diseases	4.1	Apply principles of prevention to prevent and control diseases
		4.2	Apply knowledge of structural organization of the body, body fluids, blood and blood forming organs to manage diseases.
		4.3	Utilize knowledge of musculoskeletal system to manage diseases
		4.4	Apply knowledge of cardiorespiratory system to manage diseases
		4.5	Apply knowledge of gastrointestinal system and nutrition to manage diseases.

SN	PRINCIPLE LEARNING OUTCOME	S/N	ENABLING OUTCOME
		4.6	Apply knowledge of structural organization of neuroendocrine system of the body to manage diseases
		4.7	Utilize the knowledge of genitourinary system to manage diseases.
5	Apply basic knowledge of abnormal tissue changes and diagnostic methods to manage diseases	5.1	Utilize basic knowledge of tissue changes for disease detection
		5.2	Apply knowledge of micro-organism, parasite and vector of medical importance to detect diseases
		5.3	Apply medical methods to detect and manage diseases
6	Apply basic knowledge of entrepreneurship and life skills to deal with life challenges	6.1	Employ entrepreneurship skills in improving quality of life.
		6.2	Apply life skills in improving quality of services.
		6.3	Employ customer care principals to improve quality of services

2.11 ENABLING OUTCOMES AND SUB-ENABLING OUTCOMES

Table 8: Enabling Outcomes and Sub-Enabling Outcomes

S/no	Enabling Outcome	S/no	Sub Enabling Outcome
1.1	Employ basic principles of revenue collection and billing procedures in managing finance	1.1.1	Describe revenue sources used in health care services.
		1.1.2	Utilize various tools used to collect and keep financial records
		1.1.3	Demonstrate billing processes in healthcare services
1.2	Utilize principles of resource management to manage materials and supplies	1.2.1	Describe the principles for selecting supplies and equipment
		1.2.2	Select basic supplies and equipment for provision of health services
		1.2.3	Apply procedures for storage and stock control
1.3	Utilize computer software to manage finance, material and supplies	1.3.1	Develop user and software requirement for managing finance, material and supplies.
		1.3.2	Install computer software to manage finance, material and supplies.
		1.3.3	Apply computer skills to manage finance, material and supplies.
2.1	Apply principles of communication in delivering quality health services	2.1.1	Describe principles of effective communication process
		2.1.2	Describe process of effective communication in delivering health care services
		2.1.3	Demonstrate skills of effective communication in interacting with child and adolescents
		2.1.4	Demonstrate skills of effective communication in interacting with people with speech, hearing, mental and visual disabilities.
		2.1.5	Take patient history using communication skills.
		2.1.6	Build therapeutic relationship using the communication skills
2.2	Apply professional and ethical code of conduct in providing quality health services.	2.2.1	Describe Ethics and Professionalism in medical practice
		2.2.2	Describe the professional values in provision of quality health services
		2.2.3	Describe patients' and health care provider rights in medical services
		2.2.4	Describe health personnel obligations to the society
2.3	Describe ethical dilemmas and legal issues governing provision of health services	2.3.1	Describe ethical dilemmas and ethical issues in special situations in medical practice
		2.3.2	Describe rules of law governing human rights in providing health services

\S/no	Enabling Outcome	S/no	Sub Enabling Outcome
		2.3.3	Describe legal aspect governing disclosure of health information
3.1	Apply knowledge of epidemiology to manage disease in a population	3.1.1	Differentiate determinant of health and diseases of public health importance
		3.1.2	Describe epidemiological methods used to study disease in population.
		3.1.3	Utilize different methods of diseases prevention and control
		3.1.4	Describe the occurrence of an epidemic
3.2	Apply Information Communication Technology in managing health data	3.2.1	Describe information communication technology concepts in managing health data
		3.2.2	Apply computer system in managing health data
		3.2.3	Demonstrate skills of computer application in management of health information
3.3	Utilize principles of data management in collecting, analyzing and disseminating health data	3.3.1	Describe biostatistics concepts used in collecting health data
		3.3.2	Utilize biostatistical tools used in data collection
		3.3.3	Utilize basic statistical method in compiling health data
		3.3.4	Utilize Health management Information system in managing health data.
		3.3.5	Describe different methods and stages of analyzing data
		3.3.6	Demonstrate skills of data analysis and different methods of data presentation
		3.3.7	Perform data analysis using HMIS database
		3.3.8	Apply concept of information dissemination to improve health care services
3.4	Apply knowledge of emergency preparedness in preventing and managing disaster	3.4.1	Describe principles of managing an emergency and disaster
		3.4.2	Plan for emergency preparedness
		3.4.3	Provide first aid to victims of disasters and emergency
4.1	Apply principles of prevention to prevent and control diseases	4.1.1	Describe common methods of vector control to prevent disease.
		4.1.2	Utilize principles of infection prevention and control to prevent infections.
		4.1.3	Utilize 5S strategy to improve quality of health

\S/no	Enabling Outcome	S/no	Sub Enabling Outcome
			services.
		4.1.4	Develop strategies to improve environmental sanitation
		4.1.5	Plan preventive measures for nutritional disorders
4.2	Apply knowledge of structural organization of the body, body fluids, blood and blood forming organs to manage diseases.	4.2.1	Describe structural organization and functional of human body
		4.2.2	Describe structure and functions of blood and blood forming organs.
		4.2.3	Describe body fluid, structure and functions of lymph, lymphatic system.
4.3	Utilize knowledge of musculoskeletal system to manage diseases	4.3.1	Describe structural organization and function of skeletal system
		4.3.2	Describe structural organization and function of muscles
		4.3.3	Describe structural organization and function of joints
4.4	Apply knowledge of cardiorespiratory system to manage diseases	4.4.1	Describe structure and function of cardiovascular system
		4.4.2	Describe functional organization of cardiovascular system
		4.4.3	Describe structure and function of respiratory system
4.5	Apply knowledge of gastrointestinal system and nutrition to manage diseases	4.5.1	Describe structure and function of gastro intestinal system
		4.5.2.	Describe structure and function of accessory organs of digestive system.
		4.5.3	Describe major groups of nutrients and their functions in human body
		4.5.4	Describe metabolism of carbohydrate, protein, lipids and vitamin
4.6	Apply knowledge of structural organization of neuroendocrine system to manage diseases	4.6.1	Describe structure and function of central nervous system
		4.6.2	Describe structure and functions of autonomic and peripheral nervous system
		4.6.3	Describe structure and functions of endocrine system
		4.6.4	Describe structure and functions of sensory organs

\S/no	Enabling Outcome	S/no	Sub Enabling Outcome
4.7	Utilize the knowledge and skill of genitourinary system to manage diseases.	4.7.1	Describe structure and function of urinary system
		4.7.2	Describe structure and function of male reproductive system
		4.7.3.	Describe structure and function of female reproductive system
5.1	Utilize basic knowledge of tissue changes for disease detection	5.1.1.	Describe cellular growth, injury and adaptation
		5.1.2	Describe immune response towards noxious stimuli
		5.1.3	Describe process of inflammation and healing
		5.1.4	Describe cellular response to infectious and non-infectious agent in respiratory system
		5.1.5	Describe the classification and pathogenesis of neoplastic
		5.1.6	Describe classification and pathogenesis of genetic condition
		5.1.7	Describe pathogenesis of diseases caused by chemical and environmental factors
		5.1.8	Describe nutritional disorders.
5.2	Apply knowledge of micro-organism, parasite and vectors of medical importance to detect diseases	5.2.1	Apply knowledge of bacteria and fungi for diagnosis and prevention of diseases
		5.2.2	Apply knowledge of viruses of medical importance for diagnosis and prevention of diseases
		5.2.3	Apply knowledge of vector of medical importance to diagnose and prevent diseases
		5.2.4	Apply knowledge of parasite of medical importance for disease diagnosis, prevention and control.
5.3	Apply medical methods to detect and manage diseases	5.3.1	Describe basic laboratory diagnostic procedures for disease diagnosis
		5.3.2	Describe laboratory equipment, chemical reagents, biohazards and other icons.
		5.3.3	Perform basic laboratory procedures for disease diagnosis.
		5.3.4	Perform basic patient care procedures

\S/no	Enabling Outcome	S/no	Sub Enabling Outcome
		5.3.5	Perform physical examination and interpret clinical findings
6.1	Employ entrepreneurship skills in improving quality of life.	6.1.1	Describe principles of entrepreneurship
		6.1.2	Describe sources of business financing
		6.1.3	Utilize principles of entrepreneurship to establish business
		6.1.4	Apply entrepreneurship skills in health service delivery
6.2	Apply life skills in improving quality of services.	6.2.1	Demonstrate skills of knowing and living with oneself
		6.2.2	Describe skills of knowing and living with others
		6.2.3	Demonstrate life skills for making effective decisions
		6.2.4	Demonstrate life skills in the world of work
6.3	Employ customer care principals to improve quality of services	6.3.1	Describe concepts and philosophy of customer care
		6.3.2	Describe customer services principles and techniques
		6.3.3	Demonstrate skills of customer care to improve quality of service.

2.12 ASSESSMENT AND THEIR BENCHMARKING

2.12.1 Related tasks, Assessment Criteria, Assessment Methods and Instruments

Table 9: Related tasks, Assessment Criteria, Assessment Methods and Instruments

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
1.1.1	Describe revenue sources used in health care services.	(a)	Identify various sources of revenue	Revenue sources used in health care services are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Explain the approaches used to collect revenue			
		(c)	Explain the importance of revenue collection on improving health care services			
1.1.2	Utilize various tools used to collect and keep financial records	(a)	Identify tools used for collection and keeping financial records	Tools used to collect and keep financial records are appropriately utilized.	<ul style="list-style-type: none"> • Practical • Assignments(written and practical) • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical and written assignment report
		(b)	Explain the importance of keeping financial records			
		(c)	Fill in various financial records in the appropriate account books			
		(d)	Balance the account books			
		(e)	Maintain safe custody of revenue			
		(f)	Describe financial regulations that govern utilization of funds			
		(g)	Prepare financial reports			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
1.1.3	Demonstrate billing processes in healthcare services	(a)	Explain types of payers for medical insurance	Billing processes are appropriately demonstrated in healthcare services	<ul style="list-style-type: none"> • Assignments(written and practical) • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
(b)	Describe in-patient and out-patient billing procedures					
(c)	Organize patient billing records					
(d)	Fill various health insurance claim forms					
(e)	Prepare billing document and/or write receipt					
1.2.1	Describe the principles for selecting supplies and equipment	(a)	Differentiate between supplies and equipment	Principles for selecting supplies and equipment are correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
(b)	Explain the criteria for selecting appropriate equipment and supplies for the type of services					
(c)	Identify the qualities to be considered when selecting supplies and equipment					
1.2.2	Select basic supplies and equipment for provision of health services	(a)	Identify supplies and equipment for laboratory facilities according to guideline	Basic supplies and equipment for provision of health services are properly selected.	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
(b)	Identify linen and stationary supplies for primary health facility					
(c)	Identify supplies and equipment for community health care					
(d)	Identify supplies for health care waste management					

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(e)	Prepare list for supplies and equipment			
1.2.3	Apply procedures for storage and stock control	(a)	Define storage and stock control	Stock control and inventory taking done according to protocol	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
		(b)	Explain the importance of effective stock control and taking inventory.			
		(c)	Organize store according to guideline			
		(d)	Keep accurate and reliable records of stock received and issued			
		(e)	Carry out stock taking and an inventory of stock			
		(f)	Dispose material according to the guidelines.			
1.3.1	Develop user and software requirement for managing finance, material and supplies.	(a)	Identify user requirement	User and software requirement for managing finance, material and supplies are developed according to needs.	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
		(b)	Identify software requirement			
		(c)	Explain electronic finance and supply chain management			
		(d)	Identify the fundamental principle of managing finance , material and supplies			
		(e)	Identify the major types of ICT applications in managing finance, material and supply			
		(f)	Explain the importance of an accounting information			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			system in management decisions			
1.3.2	Install computer software to manage finance, material and supplies	(a)	Describe the basic principle of software Installation in a computer	computer software for management of finance, material and supplies installed according to protocol	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
	(b)	Describe the purpose of electronic finance material and supplies system				
	(c)	Select appropriate software according to the need				
	(d)	Demonstrate basic procedures of installation of software in a computer				
1.3.3	Apply computer skills to manage finance, material and supplies.	(a)	Perform finance operations and report using computer	Computer skills in managing finance, material and supplies are correctly applied.	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
	(b)	Demonstrate ability to estimate supplies, material and budgeting				
	(c)	Manage finance material and supplies using appropriate software				
	(d)	Produce finance material and supplies reports				
	(e)	Demonstrate electronic file management				
	(f)	Identify procedures for confidentiality, backup and recovery				
2.1.1	Describe principles of effective communication	(a)	Define effective communication	Principles of effective communication	<ul style="list-style-type: none"> • Assignments • Written tests 	<ul style="list-style-type: none"> • Assignment report
		(b)	Identify components of			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			effective communication	are correctly described.	<ul style="list-style-type: none"> Oral questioning 	<ul style="list-style-type: none"> Question paper and answer guide Checklists
		(c)	Identify types of effective communication			
		(d)	Explain methods of effective communication			
		(e)	Explain flow of effective communication			
		(f)	Explain ways of providing feedback			
		(g)	Explain barriers of effective communication			
2.1.2	Demonstrate skills of effective communication in delivering health care service	(a)	Define effective communication skills	Effective communication skills are correctly demonstrated of in delivering health care service	<ul style="list-style-type: none"> Practical Assignments(written and practical) Written tests Oral questioning Field work Assignment 	<ul style="list-style-type: none"> Checklists Question paper and answer guide Practical assignment report Field assignment report
		(b)	Explain skills of effective communication			
		(c)	Demonstrate skills of effective communicating with client			
		(d)	Write official letter			
		(e)	Prepare curriculum vitae			
2.1.3	Demonstrate communication skills in interacting with child and adolescents	(a)	Describe the concept of child and adolescent health and rights.	Communication skills are appropriately demonstrated in interacting with child and adolescents	<ul style="list-style-type: none"> Practical assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Checklists Question paper and answer guide Practical assignment report
		(b)	Explain the importance of involving adolescents in the process of their own health care			
		(c)	Identify social determinants and risk factors that affect			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			child and adolescent health			
		(d)	Use techniques of communicating with child and adolescent to provide health services			
2.1.4	Demonstrate skills of effective communication in interacting with people with speech, hearing, mental and visual disabilities.	(a)	Explain the concept of communicating with speech, hearing, mental and visual disabilities.	Effective Communication skills are correctly demonstrated in interacting with people with speech, hearing, mental and visual disabilities.	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
	(b)	Explain challenges of communicating with speech, hearing, mental and visual disabilities.				
	(c)	Apply techniques of communicating with speech, hearing, and mental visual disabilities.				
2.1.5	Take patient history using communication skills.	(a)	Create rapport,	Patient history is taken according to protocol	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning • Clinical examination 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
	(b)	Determine main complaint of the patient,				
	(c)	Amplify the complains of the patient				
	(d)	Determine urgency of the problem				
	(e)	Translate patient information for diagnosis and treatment.				
	(f)	Document findings of history.				
	(g)	Present patients history systematically				
2.1.6	Build therapeutic	(a)	Define therapeutic	Therapeutic	<ul style="list-style-type: none"> • Practical 	<ul style="list-style-type: none"> • Checklists

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
	relationship using the communication skill	<p>(b) Describe the characteristics of the therapeutic relationship</p> <p>(c) Describe the boundaries of therapeutic relationship in history taking</p> <p>(d) Apply techniques for skilled interviewing</p>	relationship is built using communication skill.	<p>assignments</p> <ul style="list-style-type: none"> Written tests Oral questioning 	<ul style="list-style-type: none"> Question paper and answer guide Practical assignment report
2.2.1	Describe Ethics and Professionalism in medical practice.	<p>(a) Explain professionalism in clinical medicine practice</p> <p>(b) Explain the term ethics in medical practice</p> <p>(c) Identify the characteristics of a profession</p> <p>(d) Describe the code of ethics for medical profession</p> <p>(e) Explain the social role of a profession</p> <p>(f) Explain the roles of professional associations and licensing bodies</p>	Ethics and Professionalism in medical practice are correctly described.	<ul style="list-style-type: none"> Assignments Written tests oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
2.2.2	Describe the professional values in provision of quality health services	<p>(a) Define the terms values and integrity</p> <p>(b) Explain the link between values and a profession</p> <p>(c) Describe values in the provision of quality health services</p>	Professional values in provision of quality health services are clearly described	<ul style="list-style-type: none"> Assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
2.2.3	Describe patients and	(a) Define the term patient's	Patients and	<ul style="list-style-type: none"> Assignments 	<ul style="list-style-type: none"> Assignment

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
	health care provider rights in medical services		rights	health care provider rights in medical services are clearly described.	<ul style="list-style-type: none"> • Written tests • Oral questioning 	<ul style="list-style-type: none"> • report • Question paper and answer guide • Checklists
		(b)	Identify patient rights			
		(c)	Describe providers rights in the provision of health services			
		(d)	Describe how to meet patients' rights in the provision of health services			
		(e)	Describe approaches to uphold human rights in health services			
2.2.4	Describe health personnel obligations to the society	(a)	Describe the challenges of dual loyalty	Health personnel obligations to the society are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Describe the challenges of resource allocation			
		(c)	Describe clinicians ethical responsibilities in public health issues			
		(d)	Explain the health personnel's responsibility for his/her own actions			
		(e)	Explain the importance of workers' responsibility for own action			
		(f)	Describe how health personnel can take responsibility for own action			
2.3.1	Describe ethical dilemmas and ethical issues in special situations in Medical	(a)	Define the term ethical dilemmas	Ethical dilemmas and strategies used to solve them in special	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper
		(b)	Explain the characteristic of ethical dilemmas			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
	practice	(c)	Explain common ethical dilemmas	situations in medical practice are appropriately described		and answer guide • Checklists
		(d)	Identify sources of ethical dilemmas			
		(e)	Describe strategies used to solve ethical dilemmas			
		(f)	Describe several special situations with implications in medical ethics			
2.3.2	Describe rules of law governing human rights in providing health services	(a)	Identify human rights in relation to provision of health care	Rules of law governing human rights in providing health services are clearly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Explain challenges of human rights in medical science			
		(c)	Describe the laws and policies that affect adolescent health-care provision			
		(d)	Describe laws governing provision of health care for other groups (Prisoners, people with disabilities (example hearing, visual, mental and speech disability)).			
2.3.3	Describe legal aspect governing disclosure of health information	(a)	Define disclosure of health information in relation to medical practice	Legal aspect governing disclosure of information is correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide
		(b)	Describe health information to be disclosed			
		(c)	Describe health information to be protected			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(d)	Describe authorized users of health information			<ul style="list-style-type: none"> Checklists
3.1.1	Differentiate determinant of health and diseases of public health importance	(a)	Describe determinants of health and diseases	Determinants of health and diseases are correctly differentiated	<ul style="list-style-type: none"> Assignment Written test oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Check list
		(b)	Identify factors related to health and diseases			
		(c)	Distinguish factors related to health and diseases			
		(d)	Describe determinants of health and diseases			
3.1.2	Describe epidemiological methods used to study disease in population.	(a)	Define terms used in epidemiology	Epidemiological methods are used appropriately to study disease in population	<ul style="list-style-type: none"> Assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Checklists Question paper and answers guide Assignment report
		(b)	Explain analytical method of epidemiology			
		(c)	Explain experimental method of epidemiology			
		(d)	Explain descriptive method of epidemiology			
		(e)	Describe epidemiological tools			
3.1.3	Utilize different methods of diseases prevention and control	(a)	Describe the natural history of a disease	Different methods of diseases prevention and control are appropriately utilized.	<ul style="list-style-type: none"> Assignment Written test Oral questioning 	<ul style="list-style-type: none"> Assignment report Question papers and marking scheme Check list
		(b)	Describe different methods and levels of disease prevention			
		(c)	Develop disease interventions			
		(d)	Implement interventions for disease prevention and			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			control			
		(e)	Describe the natural history of a disease			
3.1.4	Describe the occurrence of an epidemic	(a)	Explain concept of Epidemic	Occurrence of an epidemic are correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Question paper and answers guide • Assignment report • Checklists
		(b)	Identify risk factors for an epidemic			
		(c)	Explain types of epidemics			
		(d)	Identify disease pattern			
		(e)	List steps to control epidemics			
		(f)	Explain concept of Epidemic			
		(g)	Identify risk factors for an epidemic			
		(h)	Explain types of epidemics			
		(i)	Identify disease pattern			
3.2.1	Describe Information Communication Technology concept in managing health data	(a)	Describe computer system and its characteristics	Computer system and its characteristics are correctly explained.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Explain the components of ICT			
		(c)	Describe information system resources			
		(d)	Identify types of information system and its activities			
3.2.2	Apply computer system in managing health data	(a)	Explain data resource management	Computer system is appropriately applied in	<ul style="list-style-type: none"> • Practical • Assignments (written and 	<ul style="list-style-type: none"> • Checklists • Question paper and answer
		(b)	Identify type of health computer system database			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(c)	Describe challenges in data resource management	managing health data	practical) • Written tests • Oral questioning	guide • Practical assignment report
		(d)	Identify the difference between system software and application software			
		(e)	List benefits of managing health data easier for end user			
		(f)	Choose appropriate software for handling health data at work place			
3.2.3	Demonstrate skills of computer application in management of health information	(a)	Select appropriate computer software to deliver health information	Skills of computer application are correctly demonstrated in managing health information	• Practical • Assignments (written and practical) • Written tests • Oral questioning	• Checklists • Question paper and answer guide • Practical assignment report
		(b)	Use word processing application in management of health information			
		(c)	Use excel/spreadsheet application in management of health information			
		(d)	Use presentation application in management of health information			
		(e)	Use internet and web to communicate in management of health information			
		(f)	Perform/carry out computer safety and data storage protection			
3.3.1	Describe biostatistics	(a)	Define terminologies used in	Biostatistics	• Assignments	• Checklists

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
	concepts used in collecting health data		biostatistics	concepts used in collecting health data are correctly described.	<ul style="list-style-type: none"> • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Question paper and answer guide • Assignment report
		(b)	Explain importance of biostatistics			
		(c)	Explain importance stratification of data			
		(d)	Identify different types of biostatistical data			
3.3.2	Utilize biostatistical tools used in data collection	(a)	Identify tools for statistical data collection	Biostatistical tools are appropriately utilized in data collection.	<ul style="list-style-type: none"> • Practical • Assignments (written and practical) • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
		(b)	Describe main methods of collecting statistical data			
		(c)	Develop tools for data collection			
		(d)	Use tools for data collection			
3.3.3	Utilize basic statistical methods in compiling health data	(a)	Explain methods to categorize statistical data	Basic statistical methods are correctly utilized in compiling health data	<ul style="list-style-type: none"> • Practical • Assignments (written and practical) • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
		(b)	Identify levels of measurement of statistical data (nominal, ordinal, interval, ratio)			
		(c)	Compile data using appropriate methods health			
3.3.4	Utilize Health	(a)	Explain methods of capturing	HMIS tools are	<ul style="list-style-type: none"> • Practical 	<ul style="list-style-type: none"> • Assignment

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
	management Information system in managing health data.		health data	utilized appropriately in collecting health data	<ul style="list-style-type: none"> • Assignments (written and practical) • Written tests • Oral questioning 	<ul style="list-style-type: none"> • report • Question paper and answer guide • Checklists
		(b)	Describe tools used in collecting HMIS data.			
		(c)	Explain the importance of tools in collecting HMIS data			
		(d)	Use HMIS tools to collect data			
		(e)	Explain the methods used in minimizing errors during data collection			
		(f)	Identify sources of health data	Safety, privacy and confidentiality is correctly maintained during utilization of data from different sources	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(g)	Determine data storage requirements			
		(h)	Explain the importance of maintaining safety, privacy and confidentiality in managing health data			
3.3.5	Describe different methods and stages of analyzing data	(a)	Define data analysis	Methods and stages of analyzing data are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
(b)		Identify data to be analyzed				
(c)		Identify methods for data analysis				

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(d)	Describe data entry process		<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(e)	Explain data cleaning			
		(f)	Explain data summarization			
3.3.6	Demonstrate skills of data analysis and different methods of data presentation	(a)	Describe the need for effective presentation of data	Skill of data analysis and data presentation are correctly demonstrated.	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
		(b)	Explain the methods of data presentation (tables, charts, maps/pictorial, narrative)			
		(c)	Present data using (tables, charts, maps/pictorial, narrative)			
		(d)	List tools for data analysis			
		(e)	Use different methods to analyze data			
		(f)	Use different data analysis tools			
3.3.7	Perform data analysis using HMIS database	(a)	Summarize data	Data analysis using HMIS database are correctly performed.	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
		(b)	Generate reports for local consumption			
		(c)	Generate reports for different stakeholders			
		(d)	Use the information to determine health needs			
3.3.8	Apply concept of	(a)	Identify information for		<ul style="list-style-type: none"> • Assignments 	<ul style="list-style-type: none"> • Assignment

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments	
	information dissemination to improve health care services		dissemination	Process of disseminating information is correctly described.	<ul style="list-style-type: none"> • Written tests • Oral questioning 	<ul style="list-style-type: none"> • report • Question paper and answer guide • Checklists
		(b)	Explain process of information dissemination			
		(c)	Explain Importance of Information Dissemination			
		(d)	Describe process of disseminating information	Roles of information in improving health care services are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(e)	Describe levels of information flow and feedback mechanism (community, unit, district, regional and national)			
		(f)	Explain the importance of health information in improving health services			
		(g)	Identify the users of information to improve health services			
		(h)	Establish communication message			
		(i)	Use skills of communication to disseminate information			
3.4.1	Describe principles of managing an emergency and disaster	(a)	Define an emergency and disaster	Principles of managing an emergency and disaster are correctly described.	<ul style="list-style-type: none"> • Practical • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Assignment report
(b)		Identify emergency conditions				
(c)		Identify disaster (floods, earthquakes, landslides, fire, hurricane, cyclones, famine, droughts)				

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(d)	List principles of managing disaster			
		(e)	List principles of managing an emergency			
		(f)	Explain phases in managing a disaster (mitigation, preparedness, response, recovery)			
3.4.2	Plan for emergency preparedness	(a)	Define emergency preparedness	Emergency preparedness are appropriately planned.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Assignment report
		(b)	Identify resources for emergency preparedness			
		(c)	Mobilize resources for emergency preparedness			
		(d)	Establish emergency preparedness team			
		(e)	Prepare health facility to handle an emergency			
		(f)	Identify stakeholders for emergency preparedness			
		(g)	Establish emergency network			
3.4.3	Provide first aid to victims of disasters and emergencies	(a)	Identify resources to manage victims of disaster/emergency	Victims of disasters and emergencies are correctly managed	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Assignment report
		(b)	Perform quick assessment in victim of disaster/ emergency			
		(c)	Identify risk conditions			
		(d)	Perform life saving measures to victim of disaster/ emergency			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments	
		(e)	Provide referral				
		(f)	Establish disaster network				
4.1.1	Describe common methods of vector control to prevent disease.	(a)	Define vector.	Common methods of vector control to prevent disease are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists 	
		(b)	Identify different types of vectors of medical importance.				
		(c)	Explain vector control measures.				
		(d)	Explain the limitations and delimitations of each control measure.				
4.1.2	Utilize principles of infection prevention and control to prevent infections.	(a)	Describe the overview of infection prevention and control	Challenges, health related acquired infection and post exposure prophylaxis protocol are correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report 	
			(b)				Describe the challenges of infection prevention and control
			(c)				Describe the health related acquired infections (HAIs)
			(d)				Describe Post-Exposure prophylaxis protocol
			(e)	Use appropriate hand hygiene techniques	Principles of infection prevention and control are appropriately utilized to prevent	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical
			(f)	Apply proper personal protective equipment's (cap, goggles, mask, gloves, aprons, boots and theatre			

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
		attire) (g) Apply principles of injection safety and safe handling of sharps (h) Apply skin preparation procedures for surgical intervention (i) Prepare solution for decontamination and disinfection (j) Perform decontamination (k) Perform sterilization (l) Demonstrate the procedures of waste disposal	infections		assignment report
4.1.3	Utilize 5S strategy to improve quality of health services	(a) Define 5S (b) Define TQ-KAIZEN (c) Describe concept of 5S (Sort, set, shine, standardize and sustain) (d) Describe aims of 5S (e) Describe targets of 5S (f) Describe factors for successful of 5S (g) Apply 5S strategy in provision of health services	5S strategy is appropriately utilized for improve quality of health services.	<ul style="list-style-type: none"> Practical assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Checklists Question paper and answer guide Practical/written assignment report
4.1.4	Develop strategies to improve environmental	(a) Describe occupation hazards in health care settings	Strategies to improve	<ul style="list-style-type: none"> Assignments 	<ul style="list-style-type: none"> Assignment

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
	sanitation	(b)	Describe household waste disposal	environmental sanitation are appropriately developed.	<ul style="list-style-type: none"> Written tests Oral questioning 	<ul style="list-style-type: none"> report Question paper and answer guide Checklists
		(c)	Identify sources of water supply			
		(d)	Identify sources of water contamination			
		(e)	Identify water borne diseases			
		(f)	Provide health education to prevent contamination of water sources.			
		(g)	Provide community education on hygiene to prevent infection in household			
		(h)	Work with the community to implement water treatment at small and large scale			
4.1.5	Plan preventive measures for nutritional disorders	(a)	Advise patients/caretakers on use of locally available food	Preventive measures for nutritious disorders are correctly planned	<ul style="list-style-type: none"> Practical Assignments (written & practical) Written tests Oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
		(b)	Conduct health education on balanced diet			
		(c)	Prepare nutritious diet for nutrition disorders			
4.2.1	Describe structural organization and functions of human body	(a)	Explain body region and anatomical plains		<ul style="list-style-type: none"> Assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper
		(b)	Describe general concept of anatomy and physiology			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(c)	Describe structural organization levels of human body	Structural organization and functions of human body are correctly described.	<ul style="list-style-type: none"> OSPE 	and answer guide <ul style="list-style-type: none"> Checklists
		(d)	Describe structure of different types of cells			
		(e)	Describe functions of the cell and cell components			
		(f)	Describe structure and function of connective tissue			
		(g)	Describe structure and function of bone tissue			
		(h)	Describe structure and function of muscle tissue			
		(i)	Describe structure and function of nervous tissue			
		(j)	Describe different types of body movements			
4.2.2	Describe structure and function of blood and blood forming organs	(a)	Describe functions of the blood	Structure and function of blood and blood forming organs are correctly described	<ul style="list-style-type: none"> Assignments Written tests Oral questioning OSPE 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
		(b)	Describe plasma			
		(c)	Describe different types of blood groups			
		(d)	Describe production and functions of red blood cells			
		(e)	Describe production and function of white blood cells			
		(f)	Describe production and			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			function of platelets			
		(g)	Describe structure and functions of a spleen			
4.2.3	Describe body fluid, structure and functions of lymph and lymphatic system.	(a)	Describe body fluid compartments	Structure and functions of body fluid, lymph and lymphatic system are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
(b)		Explain the constituents of body fluid compartments				
(c)		Describe the constituent of lymph of the lymphatic system				
(d)		Describe the draining system				
(e)		Explain functions of the lymphatic system				
4.3.1	Describe structural organization and function of skeletal system	(a)	Describe the structural organization of skeleton	Structural organization and functions of skull and vertebral column are correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Describe structural organization and functions of the skull			
		(c)	Describe structural organization and functions of vertebral column			
		(d)	Describe structural organization and functions of the thoracic cage	Structural organization and function of shoulder, upper limb and thoracic cage are correctly	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide
		(e)	Describe structural organization and function of the shoulder girdle			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(f)	Describe structural organization of the upper limb bones	described.		<ul style="list-style-type: none"> Checklists
		(g)	Describe structural organization of the pelvic girdle	Pelvic girdle and lower limb bones structural organization and function are appropriately described	<ul style="list-style-type: none"> Assignments Written tests Oral questioning OSPE 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
		(h)	Describe structural organization of lower limb bones			
4.3.2	Describe structural organization and function of muscles	(a)	Describe muscles of mastication and facial expression	Structural organization and functions of muscles are appropriately described	<ul style="list-style-type: none"> Assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
		(b)	Describe muscles of the head and neck			
		(c)	Describe muscles of the arm, forearm and hand			
		(d)	Describe thoracic and abdominal wall muscles			
		(e)	Describe muscles of the pectoral girdle and vertebral column			
		(f)	Describe muscles of the pelvis and perineum			
		(g)	Describe muscles of the thigh, leg and foot			
4.3.3	Describe structural	(a)	Describe structural	Structural	<ul style="list-style-type: none"> Assignments 	<ul style="list-style-type: none"> Assignment

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
	organization and function of joints	(a) organization of joints (b) Describe types of joints (c) Describe characteristics and function of joints (d) Describe types and range of movement at synovial joints	organization and functions of joints are appropriately described	<ul style="list-style-type: none"> • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • report • Question paper and answer guide • Checklists
4.4.1	Describe structure and functions of cardiovascular system	(a) Explain organization of the cardiovascular system (b) Describe structure and functions of the heart (c) Describe Structure of blood vessels	Structure and functions of cardiovascular system are correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
4.4.2	Describe functional organization of cardiovascular system	(a) Describe the conduction system of the heart (b) Describe pulmonary circulation (c) <u>Describe blood circulation to the head and neck</u> (d) <u>Describe blood circulation to the upper limb and thorax</u> (e) <u>Describe blood circulation to the abdomen and internal Organs</u> (f) <u>Describe blood circulation to the pelvis and lower limb</u> (g) Describe entero-hepatic	Structure and functional organization of cardiovascular system is correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			circulation			
		(h)	Describe foetal circulation	Foetal circulation is appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
4.4.3	Describe structure and function of respiratory system	(a)	Describe the structure of the upper respiratory tract	Structure and functions of respiratory system are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Describe the structure of lower respiratory tract.			
		(c)	Explain the functions of the respiratory tract.			
		(d)	Describe pleura and pleural cavity			
		(e)	Explain respiratory process	Physiology of respiratory system is correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(f)	Describe pulmonary volumes and capacities			
		(g)	Explain types of respiration			
4.5.1	Describe structure and function of gastrointestinal system	(a)	Describe structure of the oral cavity	Structure and	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper
		(b)	Explain constituents and function of saliva			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(c)	Describe the structure and function of oesophagus	function of the gastrointestinal system are correctly described.	<ul style="list-style-type: none"> OSPE 	<ul style="list-style-type: none"> and answer guide Checklists
		(d)	Explain mechanism of swallowing			
		(e)	Describe structure and function of the stomach			
		(f)	Describe structure and functions of the small intestines			
		(g)	Describe structure and function of large intestines			
		(h)	Describe structure and function of anal canal			
4.5.2	Describe structure and function of accessory organs of digestive system.	(a)	Describe structure and functions of the liver and gallbladder	Structure and function of the accessory organs of digestive system are correctly described.	<ul style="list-style-type: none"> Assignments Written tests Oral questioning OSPE 	<ul style="list-style-type: none"> - Assignment report Question paper and answer guide Checklists
		(b)	Describe structure of the pancreas			
		(c)	Explain the production and functions of pancreatic secretions			
4.5.3	Describe major groups of nutrients and their functions in human body	(a)	Identify main groups of foods	Major groups of nutrients and their functions are correctly described	<ul style="list-style-type: none"> Assignments Written tests Oral questioning OSPE 	<ul style="list-style-type: none"> - Assignment report Question paper and answer guide
		(b)	Describe functions of Protein			
		(c)	Describe functions of Carbohydrates			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(d)	Describe functions of Fats			<ul style="list-style-type: none"> • Checklists
		(e)	Describe functions of Vitamins and minerals			
4.5.4	Describe metabolism of carbohydrate, protein, lipids and vitamin.	(a)	Describe metabolism	Carbohydrate, protein, lipids and vitamin metabolism are correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Explain the metabolism of carbohydrate			
		(c)	Explain the metabolism of protein			
		(d)	Explain lipid metabolism			
		(e)	Explain metabolism of vitamin			
4.6.1	Describe structure and function of central nervous system	(a)	Describe structural organization of the nervous system	Structure and functions of central nervous system are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Describe structure of the brain			
		(c)	Describe structure of the meninges			
		(d)	Explain the functions of the brain			
		(e)	Describe ventricular system and cerebrospinal fluid flow			
		(f)	Describe cranial nerve			
		(g)	Describe functions of the cranial nerves			
		(h)	Describe the structure and function of the spinal cord			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
4.6.2	Describe structure and function of autonomic and peripheral nervous system	(a)	Explain the organization of peripheral nerve	Structure and functions of autonomic and peripheral nervous system are correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
(b)	Describe different spinal nerve					
(c)	Describe different nerve plexuses					
(d)	Describe structural composition of sensory and motor nerve tract of the spinal cord					
(e)	Explain functions of the autonomic nervous system					
(f)	Describe parasympathetic nervous system					
(g)	Describe sympathetic nervous system					
(h)	Describe the organization of somatic and visceral parts of the nervous system					
4.6.3	Describe structure and functions of endocrine system	(a)	Describe structure of the pituitary gland	Structure and function of endocrine system are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
(b)	Explain functions of pituitary hormones					
(c)	Explain function of adrenal hormones					
(d)	Describe functions of pancreatic islets hormones					

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
		(e) Explain functions of local hormones and pineal body hormones (f) Explain functions of pineal body hormones (g) Describe structure of the thyroid and parathyroid glands (h) Explain the functions of thyroid hormones (i) Describe the functions of parathyroid hormones			
4.6.4	Describe structure and functions of sensory organs	(a) Describe structure of the skin and its appendages (b) Explain functions of the skin (c) Describe glands of skin (d) Describe the structure of the ear (e) Describe the mechanism of hearing (f) Describe the physiology of balance (g) Describe structure of the eye and its adnexa (h) Describe the structure and function of extra-ocular muscles	Structure and functions of the sensory organs are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(i)	Describe the physiology of vision of the eye			
		(j)	Describe the function of eye.			
		(k)	Describe the function of the nose			
4.7.1	Describe structure and functions of urinary system	(a)	Describe structural organization of urinary system	Structure and functions of urinary system are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Explain structure of the kidney			
		(c)	Describe structure of a nephron			
		(d)	Explain filtration process			
		(e)	Explain secretion and tubular reabsorption			
		(f)	Explain control of tubular reabsorption			
		(g)	Describe structure of ureter, urinary bladder and urethra			
		(h)	Explain mechanism of micturition			
4.7.2	Describe structure and function of male reproductive system	(a)	Describe organization of male reproductive system	Structure and functions of male reproductive system are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide
		(b)	Describe descend of the testes			
		(c)	Describe the function of testes			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(d)	Describe the development, storage and transport of spermatozoa.			<ul style="list-style-type: none"> • Checklists
		(e)	Describe structure and functions of seminal vesicles, prostate and bulbourethral glands			
		(f)	Describe structure and functions of penis			
		(g)	Describe and explain secondary male characteristics			
4.7.3	Describe structure and functions of female reproductive system	(a)	Describe structures of the perineum and external genitalia	Structure and functions of female reproductive system are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Describe structure and functions of the uterus and fallopian tube			
		(c)	Describe structure of the ovary			
		(d)	Describe formation of primordial follicles and follicular maturation			
		(e)	Describe hormonal role and puberty in females			
		(f)	Describe physiology of endometrial cycle, ovulation			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			and menstruation			
		(g)	Describe structure of a non-lactating breast			
5.1.1	Describe cellular growth, injury and adaptation	(a)	Explain the cell cycle and growth	Cellular growth, injury and adaptation are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Explain the control of the cell cycle			
		(c)	Explain cell injury			
		(d)	Describe the mechanism of cellular response and adaptation to injury			
5.1.2	Describe immune response toward noxious stimuli	(a)	Describe normal immune response (adaptive and innate immunity)	Immune response toward noxious stimuli are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Describe the principles of Immune Diseases			
		(c)	Explain immune responses			
		(d)	Explain types of hypersensitivity			
		(e)	Explain autoimmune diseases			
		(f)	Explain immune deficiency diseases			
5.1.3	Describe process of inflammation and healing	(a)	Define inflammation	Process of inflammation and healing are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer
		(b)	Explain cardinal signs and types of inflammation			
		(c)	Explain the basic phenomenon in acute			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			inflammation			guide
		(d)	Explain the basic phenomenon in chronic inflammation			<ul style="list-style-type: none"> Checklists
		(e)	Identify the main chemical mediator of inflammation			
		(f)	Explain the outcome and complication of inflammation			
		(g)	Describe the mechanisms of tissue healing and repair			
5.1.4	Describe cellular response to infectious and non-infectious agents in respiratory system.	(a)	Explain the pathology and pathogenesis of the upper respiratory tract infections	Cellular response to infectious and non-infectious agents in respiratory system are appropriately described	<ul style="list-style-type: none"> Assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
		(b)	Explain the main pathology of lung infections			
		(c)	Describe the pathogenesis of pneumonia			
		(d)	Describe the pathology of bronchial tree			
5.1.5	Describe classification and pathogenesis of neoplasia	(a)	Explain the nomenclature and classification of neoplasm	Classification and pathogenesis of neoplasia are correctly described	<ul style="list-style-type: none"> Assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
		(b)	Explain the risk factors for cancer development			
		(c)	Describe causation (oncogenesis/carcinogenesis)			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			neoplasia			
		(d)	Describe basic principles of cancer prevention and control			
5.1.6	Describe classification and pathogenesis of genetic conditions.	(a)	Describe the classification of genetic diseases	Classification and pathogenesis of genetic conditions are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
	(b)	Describe genetic mutation				
	(c)	Describe classification and pathogenesis of disease related to gene mutation				
	(d)	Describe classification and pathogenesis of genetic diseases with multifactorial inheritance				
	(e)	Describe classification and pathogenesis of genetical diseases arising from chromosomal aberration				
5.1.7	Describe pathogenesis of diseases caused by Chemical and environmental factors	(a)	Describe pathogenesis of diseases caused by air pollution and tobacco product use.	Pathogenesis of diseases caused by Chemical, environmental and nutritional factors are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
	(b)	Describe pathogenesis of alcohol related diseases				
	(c)	Describe pathogenesis of chemical and drug related diseases				
	(d)	Describe pathogenesis of				

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			diseases due to physical agents			
		(e)	Explain nutritional and dietary diseases (including atherosclerosis)			
		(f)	Explain the relationship of diet and cancer			
5.1.8	Describe nutritional disorders.	(a)	Identify different types of nutritional disorders (Underweight, obesity, kwashiorkor, Marasmus and Marasmic-kwashiorkor)	Nutritional disorders are correctly described.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
	(b)	Distinguish various types of nutritional disorders				
	(c)	Plan prevention for nutritional disorders				
5.2.1	Apply knowledge of bacteria and fungi for diagnosis and prevention of diseases	(a)	Explain the Gram positive bacteria -(Example;- Streptococcus group, Staphylococcus group, pneumococcus group, Clostridium tetani, Bacillus anthracis)	Knowledge of bacteria and fungi are correctly applied for diagnosis and prevention of diseases	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
	(b)	Explain the Gram negative bacteria- (Example:-Neisseria gonorrhoea , Neisseria meningitidis , Salmonella spp, Shigella spp, Escherichia				

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
		coli, Haemophylus spp, Brucellaspp, Yersinia pestis, Vibrio cholera)			
		(c) Explain acid fast bacilli- (Mycobacterum tuberclosis and Mycobacterum leprae)			
		(d) Explain the spirochaete (Treponema pallidum and Borreliaspp)			
		(e) Explain the fungus of medical importance-(Candida albicans, Tinea spp, Cryptococuss neoformans, histoplasm, coccidiomides and mushroom)			
5.2.2	Apply knowledge of viruses of medical importance for diagnosis and prevention of diseases	(a) Explain the virus of medical importance	Knowledge of viruses of medical importance is appropriately applied for diagnosis and prevention of diseases	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
	(b) Describe viruses transmitted through inhalation- (measles, varicella, variola, Rubella, Mumps, respiratory syncitial virus, influenza virus (H ₁ N ₁)nd adenovirus)				
	(c) Describe virus causing haemorrhagic – (Chikungunya, Rift valley fever, Murbag, Ebola, Lassa)				

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
		(d) Describe viruses transmitted through faecal-oral route (Hepatitis A, Poliovirus, enterovirus group) (e) Describe viruses transmitted by vectors- (yellow fever, dengue fever virus) (f) Describe virus affecting immune system –(HIV, Herpes zoster, Epstein bar virus, cytomegalovirus, Human papilloma virus, chicken pox,) (g) Describe virus affecting the CNS - Rabies virus (h) Describe virus transmitted through contact- Hepatitis B and C			
5.2.3	Apply knowledge of vector of medical importance to diagnose and prevent diseases	(a) Describe vector and ectoparasite. (b) Describe the life cycle (mosquitoes, tsetse flies, Simulium flies spp, bed bug and fleas e.g pulex irritant, Xenopsylla cheopsis, tick “Ornithodoros moubata” Pediculus spp, Musca	Knowledge of vector of medical importance is appropriately applied to diagnose and prevent diseases	<ul style="list-style-type: none"> • Practical • Assignments (written and practical) • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
		<p>domestica) Crabe louse and Tunga penetrans, Dictyoptera (cochroach) and Bedbug</p> <p>Snail vectors (Bulinus, Onchomelania and Biomphalaria),</p> <p>(c) Describe mode of diseases transmission caused by vectors.</p> <p>(d) Describe the control measures of vectors.</p>			
5.2.4	Apply knowledge of parasite of medical importance for disease diagnosis, prevention and control.	<p>(a) Describe intestinal nematodes-(Hookworm, Ascaris lumbricoides, Strongyloides, Enterobius vermicularis, Trichuris trichiura)</p> <p>(b) Describe tissue nematodes-(Wucheria bancrofti, Onchocerca volvulus and Dipetalonema spp)</p> <p>(c) Describe trematodes of medical importance-(Schistosoma haematobium, Schistosoma mansoni, Schistosoma japonicum)</p> <p>(d) Describe cestodes of medical</p>	Knowledge of parasite of medical importance is correctly applied for disease diagnosis, prevention and control.	<ul style="list-style-type: none"> • Practical assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
		importance-(Taenia saginata, Taenia solium, Echinococcus granulosus, Hymenolepis spp, Diphyllbothrium and Dipylidium)			
		(e) Describe blood parasites of medical importance-(Plasmodium spp, Trypanosomes, Borrelia, Leishmania spp, Toxoplasma spp)			
		(f) Describe protozoa of medical importance-(Entamoeba histolytica, Entamoeba coli, Giardia lamblia, Trichomonas vaginalis, Trichomonas hominis, Balantidium coli, Cryptosporidium parvum and Isospora belli)			
5.3.1	Describe basic laboratory diagnostic procedures for disease diagnosis	(a) Describe Giemsa staining technique, Field staining and Ziehl-Neelsen staining and Gram stain	Basic laboratory diagnostic procedures for disease diagnosis are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
	(b) Explain the rapid test for blood parasites.				
	(c) Explain wet preparation for				

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			stool and urine for Schistosomiasis			
		(d)	Explain rapid test for Malaria, HIV, Hepatitis B&C and Syphilis			
5.3.2	Describe laboratory equipment, chemical, reagents, biohazards and other icons	(a)	Name different types of instruments and equipment for common laboratory procedures	Laboratory equipment, warning signs, chemical and reagents are appropriately described.	<ul style="list-style-type: none"> • Practical • Assignment (practical and written) • Written test • OSPE 	<ul style="list-style-type: none"> • Practical and written assignment report • Question paper and answer guide • Checklists
	(b)	Identify different parts of the microscopy				
	(c)	Identify different chemicals and reagents used in the laboratory				
	(d)	Explain international warning signs/icons				
5.3.3	Perform basic laboratory procedures for disease diagnosis.	(a)	Explain to the patients about the laboratory procedure to be undertaken	Basic laboratory procedures are performed according to SOP/protocol	<ul style="list-style-type: none"> • Practical • Assignments (written and practical) • Written tests • Oral questioning • OSPE 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical and written assignment reports
	(b)	Collect specimen from patient- (- Blood, Stool, Urine, Sputum, skin snip and swab)				
	(c)	Label and dispatch specimen to laboratory				
	(d)	Perform laboratory test for stool, urine and sputum				
	(e)	Perform blood examination				

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
		for parasites, viruses (HIV), Hepatitis B&C, Haemoglobin (Hb), blood grouping (ABO & Rh) and blood glucose levels.			
		(f) Demonstrate how to use different laboratory equipment.			
		(g) Interpret laboratory test results and inform the patient.			
5.3.4	Perform basic patient care procedures	(a) Explain examination procedure to the patient	Basic patient care procedures are performed according to standards.	<ul style="list-style-type: none"> • Practical • Assignments (written and practical) • Written tests • Oral questioning • OSCE 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical and written assignment reports
	(b) Position patient on bed/table for examination				
	(c) Prepare beds for different medical and surgical conditions Types of beds and accessories:- (Delivery bed, theatre bed, fracture beds, use foot blocks, bed cradle, hard board for spine injury, bed for gallows traction, Bed for skeletal traction, bed for skin traction)				
	(d) Take and interpret vital signs.				

S/no	Sub enabling outcomes	Related Tasks	Assessment Criteria	Assessment Methods	Assessment Instruments
		(e) Administer medications to patients -5Rs(Right patient, Right medicine, Right dose, Right time and Right route) (f) Provide care for pre-operative, post-operative and unconscious patient using standard nursing procedures (g) Perform wound dressing and urethral catheterization. (h) Perform basic lifesaving procedures (CPR and intravenous cannulation)			
5.3.5	Perform physical examination and interpret clinical findings	(a) Prepare examination tools. (b) Maintain patient's privacy (c) Perform general examination. (d) Conduct systemic examination. (e) Record findings of physical examination. (f) Interpret physical examination findings (g) Maintain confidentiality of patient's findings	Physical examination and interpretation of clinical findings are performed according to standards	<ul style="list-style-type: none"> • Practical • Assignments (written and practical) • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Checklists • Question paper and answer guide • Practical assignment report
6.1.1	Describe principles of entrepreneurship	(a) Define entrepreneurship. (b) Differentiate between entrepreneurship,	Principles of entrepreneurship are appropriately	<ul style="list-style-type: none"> • Assignments • Written tests 	<ul style="list-style-type: none"> • Assignment report

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			entrepreneur and enterprise	described	<ul style="list-style-type: none"> oral questioning 	<ul style="list-style-type: none"> Question paper and answer guide Checklists
		(c)	States the functions of entrepreneurs			
		(d)	Identifies the characteristics of an entrepreneur			
		(e)	Describe different areas where entrepreneurship can be applied			
		(f)	Explain the importance of entrepreneurship			
6.1.2	Describe sources of business financing	(a)	Identify types and sources of business financing	Sources of business financing are appropriately described	<ul style="list-style-type: none"> Assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
		(b)	List advantages and disadvantages of the different sources of financing			
		(c)	Explain factors governing the choice between different sources of funds			
6.1.3	Utilize principles of entrepreneurship to establish business	(a)	Define the term entrepreneurial organization/business.	Principles of entrepreneurship are appropriately utilized to establish business	<ul style="list-style-type: none"> Assignments Written tests Oral questioning 	<ul style="list-style-type: none"> Assignment report Question paper and answer guide Checklists
		(b)	Describe factors for promoting entrepreneurial activities			
		(c)	Identify factors to consider in starting a business			
		(d)	Explain the importance of creating the entrepreneurial environment within the Organization			
		(e)	Develop a business plan			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
6.1.4	Apply entrepreneurship skills in health service delivery	(a)	Identify types of customers in health service market	Entrepreneurship skills are correctly applied in health service delivery	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
(b)	Determine the entrepreneurial opportunities in the health care field					
(c)	Explain the barriers to health care entrepreneurship					
(d)	Describe Entrepreneurship skill needed in health care services					
6.2.1	Demonstrate skills of knowing and living with oneself	(a)	Define self-awareness, self-esteem, assertiveness, & emotion	Skills of knowing and living with oneself are appropriately demonstrated	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
(b)	State the importance of self-awareness, high self-esteem					
(c)	Distinguish the terms passive, aggressive and assertive behavior					
(d)	Identify the values and indicators of skills of knowing and living with oneself					
(e)	Describe situations which require assertiveness					
(f)	Explain the causes and effects of different emotions & Stress					
(g)	Apply strategies of coping with emotions & stress					
6.2.2	Describe skills of knowing and living	(a)	Describes the various types of relationships	Skills of knowing and living with	<ul style="list-style-type: none"> • Assignments 	<ul style="list-style-type: none"> • Assignment

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
	with others	(b)	Identify factors which influence relationship formation	others are appropriately described	<ul style="list-style-type: none"> • Written tests • Oral questioning 	report <ul style="list-style-type: none"> • Question paper and answer guide • Checklists
		(c)	Identify the values and indicators of healthy relationships			
		(d)	Explains the importance of negotiation			
		(e)	Identify the requirements for effective negotiation			
		(f)	Identify the values and indicators of positive peer influence			
		(g)	States the causes and effects of conflict			
		(h)	Identify strategies for non-violent conflict resolution			
6.2.3	Demonstrate life skills for making effective decisions	(a)	Explains the meaning of critical & creative thinking	Life skills are correctly demonstrated for making effective decisions.	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	State the importance of critical & creative thinking			
		(c)	Identify obstacles to critical & creative thinking			
		(d)	Describes the process of decision making			
		(e)	Identify the values and indicators of effective decision making			
		(f)	Explains the meaning of problem solving			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
		(g)	Relates skills of decision making to problem solving			
6.2.4	Demonstrate life skills in the world of work	(a)	Identify life skills required in the world of work	Life skills are appropriately demonstrated in the world of work	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Identify different alternatives for earning a living			
		(c)	Explains how different life skills can be important in earning a living			
		(d)	Identify the life skills one require to become financially independent			
6.3.1	Describe concepts and philosophy of customer care	(a)	Define the terms; customer, customer care, and customer satisfaction	Concepts and philosophy of customer care are correctly described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Explain the characteristics of Good Customer Service			
		(c)	Describe the factors for customer satisfaction			
		(d)	List the types of Customer Service			
		(e)	List key elements of customer care			
		(f)	Outline and explain the basic need of customer			
6.3.2	Describe customer services principles and techniques	(a)	Describe principles of customer care	Customer service principles and techniques are appropriately described	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
		(b)	Explain the techniques used in providing quality customer care			
		(c)	Describe the importance of			

S/no	Sub enabling outcomes	Related Tasks		Assessment Criteria	Assessment Methods	Assessment Instruments
			first impression customer service.			
		(d)	List the steps needed to begin problem solving in the customer care			
6.3.3	Demonstrate skills of customer care to improve quality of service.	(a)	Describe the determinants of quality service.	Skills of customer care are correctly demonstrated to improve quality of service	<ul style="list-style-type: none"> • Assignments • Written tests • Oral questioning 	<ul style="list-style-type: none"> • Assignment report • Question paper and answer guide • Checklists
	(b)	Explain the role of customer care in health service delivery				
	(c)	Identify the practices needed to provide excellent customer service				
	(d)	Explain the significance of service quality assurance in the development of health service sector.				
	(e)	Describe the Steps for creating an effective customer service program				
	(f)	Use customer care principals in provision of health service				

2.12.2 Benchmarks for Assessment criteria

Benchmarking is a means of determining the learner’s achievement based on the statements that indicate what the learner is expected to do in order to demonstrate that s/he has successfully realized the sub-enabling outcomes. The statements have been formulated based on the tasks the learner is expected to perform to realize the respective outcome. In this curriculum, benchmarks comprise of performance statement indicating the criteria for gauging learners at satisfactory, good, and excellent levels.

It is expected that the module facilitators will make use of the developed benchmark statements during curriculum implementation.

Table 10: Assessment Criteria and Benchmarking

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
1.1.1.1 Revenue sources used in health care services are correctly described	Explain the approaches used to collect revenue	Identify various sources of revenue and explain the approaches used to collect revenue	Identify various sources of revenue, explain the approaches used and importance of revenue collection on improving health care services
1.1.2.1 Tools used to collect and keep financial records are appropriately utilized.	Identify tools for collection and keeping financial records, describe importance of keeping financial records, financial regulations that govern utilization of funds, fill in and balance various account books	Identify tools for collection and keeping financial records, describe importance of keeping financial records, financial regulations that govern utilization of funds, fill in and balance various account books and maintain safe custody of revenue	Identify tools for collection and keeping financial records, describe importance of keeping financial records, financial regulations that govern utilization of funds, fill in and balance various account books and maintain safe custody of revenue, and prepare financial reports.
1.1.3.1 Billing processes are appropriately demonstrated in healthcare services	Describe types of payers for medical insurance, in-patient and out-patient billing procedures and fill various	Describe types of payers for medical insurance, in-patient and out-patient billing procedures,	Describe types of payers for medical insurance, in-patient and out-patient billing procedures, organize patient billing records, fill various health insurance claim forms and prepare billing document and/or

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
	health insurance claim forms.	organize patient billing records and fill various health insurance claim forms.	write receipt
1.2.1.1 Principles for selecting supplies and equipment are correctly described.	Explain the criteria for selecting appropriate equipment and supplies for the type of services	Explain the criteria for selecting appropriate equipment and supplies and qualities to be considered.	Differentiate between supplies and equipment, explain the criteria for selecting appropriate equipment and supplies and qualities to be considered.
1.2.2.1 Basic supplies and equipment for provision of health services are properly selected.	Identify basic supplies and equipment for provision of health services	Identify basic supplies and equipment for provision of health services and categorize them accordingly.	Identify basic supplies and equipment for provision of health services, categorize them accordingly and prepare list of supplies and equipment.
1.2.3.1 Stock control and inventory taking done according to protocol	Define storage and stock control, organize store according to guideline and carry out stock taking and an inventory of stock	Define storage and stock control, explain the importance of effective stock control and taking inventory, organize store according to guideline and carry out stock taking and an inventory of stock	Define storage and stock control, explain the importance of effective stock control and taking inventory, organize store according to guideline, carry out stock taking and inventory, keep records of stock received and issued and dispose material according to the guidelines.
1.3.1.1 User and software requirement for managing finance, material and supplies are developed according to needs.	Identify user and software requirement and types of ICT applications in managing finance, material and supply.	Identify user and software requirement, types of ICT applications in managing finance, material and supply and explain electronic finance and supply chain management	Identify the fundamental principle of managing finance, material and supplies, user and software requirement, types of ICT applications and explain electronic finance and supply chain management and the importance of accounting information system in managing decisions
1.3.2.1 Computer software	Describe the basic principles	Describe the basic principles of	Describe the basic principles of software

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
	for management of finance, material and supplies installed according to protocol	of software installation and demonstrate procedures of installation of software in a computer	software installation, select appropriate software according to the need and install in the computer.
1.3.3.1 Computer skills in managing finance, material and supplies are correctly applied.	Demonstrate ability to estimate supplies, material, budgeting and use appropriate software to manage finance material and supplies	Demonstrate ability to estimate supplies and material, budgeting, electronic file management, use appropriate software to manage finance, material, supplies and identify procedures for confidentiality, backup and recovery	Demonstrate ability to estimate supplies and material, budgeting, electronic file management use appropriate software to manage finance, material, supplies, identify procedures for confidentiality, backup and recovery and produce reports
2.1.1.1 Principles of effective communication are correctly described.	Define effective communication, identify components, type and explain methods of effective communication	Define effective communication, identify components, type and explain methods, flow and barriers of effective communication	Define effective communication, identify components, type and explain methods, flow and barriers of effective communication and ways of providing feedback
2.1.2.1 Effective communication skills are correctly demonstrated in delivering health care service	Define effective communication, explain skills of effective communication and communicate with client	Define effective communication, explain skills of effective communication, communicate with client and write official letter.	Define effective communication, explain skills of effective communication, communicate with client, write official letter and prepare curriculum vitae
2.1.3.1 Communication skills are appropriately demonstrated in interacting with child and adolescents	Describe the concept of child and adolescent health, rights and use communication techniques to provide health services	Describe the concept of child and adolescent health, rights, importance of involving adolescents in the process of their own health care and use communication techniques to provide health services	Describe the concept of child and adolescent health and rights, social determinants and risk factors that affect child and adolescent health, importance of involving adolescents in the process of their own health care and use communication techniques to provide health services

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
2.1.4.1 Effective Communication skills are correctly demonstrated in interacting with people with speech, hearing, mental and visual disabilities.	Apply techniques of communicating with speech, hearing, mental and visual disabilities.	Explain the concept of communicating with speech, hearing, mental and visual disabilities and apply communication techniques in providing health services	Explain the concept and challenges of communicating with speech, hearing, mental and visual disabilities, apply communication techniques in providing health services
2.1.5.1 Patient history is taken according to protocol	Create rapport, determine and amplify main complaint of the patient and determine urgency of the problem	Create rapport, determine and amplify main complaint of the patient, determine urgency of the problem, translate patient information for diagnosis and treatment	Create rapport, determine and amplify main complaint of the patient, determine urgency of the problem, translate patient information for diagnosis and treatment, document findings and present patients' history systematically.
2.1.6.1 Therapeutic relationship is built using communication skill.	Define therapeutic relationship and apply techniques for skilled interviewing	Define therapeutic relationship, describe the characteristics of the therapeutic relationship and apply techniques for skilled interviewing	Define therapeutic relationship, describe the characteristics of the therapeutic relationship, apply techniques for skilled interviewing and describe the boundaries of therapeutic relationship in history taking
2.2.1.1 Ethics and Professionalism in medical practice are correctly described.	Explain the term ethics, professionalism in clinical medicine practice and describe the code of ethics for medical profession	Explain the term ethics, professionalism, social role, code of ethics in clinical medicine practice and characteristics of profession	Explain the term ethics, professionalism, social role, code of ethics in clinical medicine practice, characteristics of profession and roles of professional associations and licensing bodies
2.2.2.1 Professional values in provision of quality health services are clearly described	Define either the term value or integrity and describe values in the provision of quality health services	Define the terms values, integrity and describe values in the provision of quality health services	Describe values and integrity in the provision of quality health services and link between values and a profession
2.2.3.1 Patients and health care provider rights in	Describe patients and providers rights in the	Describe patients and providers rights and how to meet patients'	Describe patients and providers right, how to meet patients' rights and approaches to uphold human

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
medical services are clearly described.	provision of health services	rights in the provision of health services	rights in the provision of health services
2.2.4.1 Health personnel obligations to the society are appropriately described	Describe clinicians ethical responsibilities in health issues	Describe clinicians ethical responsibilities in health issues and how he/she can take responsibility for own actions	Describe clinicians ethical responsibilities in health issues, challenges of dual loyalty and resource allocation and take responsibility for own actions
2.3.1.1 Ethical dilemmas and strategies used to solve them in special situations in medical practice are appropriately described	Describe ethical dilemmas, characteristic of ethical dilemmas and strategies used to solve ethical dilemmas	Describe ethical dilemmas, its characteristic, sources and strategies used to solve them	Describe ethical dilemmas, its characteristic, sources, several special situations with implications in medical ethics and strategies used to solve ethical dilemmas
2.3.2.1 Rules of law governing human rights in providing health services are clearly described.	Identify human rights in relation to provision of health care and explain challenges of human rights in medical science	Identify human rights in relation to provision of health care, explain challenges of human rights in medical science and describe the laws and policies that affect adolescent health-care provision	Identify human rights in relation to provision of health care, explain challenges of human rights in medical science, describe the laws and policies that affect adolescent and other groups in health-care provision
2.3.3.1 Legal aspect governing disclosure of information is correctly described.	Define disclosure of health information in relation to medical practice, describe health information to be disclosed and protected	Define disclosure of health information in relation to medical practice, describe health information to be disclosed and protected and authorized users of health information	Define disclosure of health information in relation to medical practice, describe health information to be disclosed and protected, authorized users of health information and consequences of disclosing to an authorized user
3.1.1.1 Determinants of	Describe any four	Identify factors and describe any	Identify factors and describe determinants of

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
health and diseases are correctly differentiated	determinants of health and diseases	four determinants of health and diseases	health and diseases
3.1.2.1 Epidemiological methods are used appropriately to study disease in population	Define terms used in epidemiology, describe epidemiological tools, and explain one of the method of epidemiology	Define terms used in epidemiology, describe epidemiological tools, and explain two of the method of epidemiology	Define terms used in epidemiology, describe epidemiological tools, and explain three method of epidemiology
3.1.3.1 Different methods of diseases prevention and control are appropriately utilized.	Describe the natural history of a disease, different methods and levels of disease prevention	Describe the natural history of a disease, different methods, levels of disease prevention and develop disease interventions	Describe the natural history of a disease, different methods, levels of disease prevention, develop and implement interventions for disease prevention and control
3.1.4.1 Occurrence of an epidemic are correctly described.	Explain concept, types and risk factors for an epidemic	Explain concept, types, risk factors and disease pattern for an epidemic	Explain concept, types, risk factors and disease pattern for an epidemic, and list steps to control epidemics
3.2.1.1 Computer system and its characteristics are correctly explained.	Describe computer system, its characteristics, and components of ICT	Describe computer system, its characteristics, components of ICT, and information system resources	Describe computer system, its characteristics, components of ICT, information system resources, types of information system and its activities
3.2.2.1 Computer system is appropriately applied in managing health data	Explain data resource management, difference between system software and application software, identify type of health computer system database and choose appropriate software for handling health data at work	Explain data resource management, difference between system software and application software, identify type of health computer system database, choose appropriate software for handling health data at work place and list benefits of	Explain data resource management, its challenges, difference between system software and application software, identify type of health computer system database, choose appropriate software for handling health data at work place and list benefits of managing health data easier for end

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
	place	managing health data easier for end user	user
3.2.3.1 Skills of computer application are correctly demonstrated in managing health information	Select appropriate computer software to deliver health information, use word processing, excel/spreadsheet and presentation applications in management of health information	Select appropriate computer software to deliver health information, use word processing, excel/spreadsheet, presentation applications and internet/web to communicate in management of health information	Select appropriate computer software to deliver health information, use word processing, excel/spreadsheet, presentation applications and internet/web to communicate in management of health information, perform/carry out computer safety and data storage
3.3.1.1 Biostatistics concepts used in collecting health data are correctly described.	Define terminologies used in biostatistics and identify different types of biostatistical data	Define terminologies used in biostatistics, explain importance of biostatistics and identify different types of biostatistical data	Define terminologies used in biostatistics, explain importance of biostatistics and stratification of data, and identify different types of biostatistical data
3.3.2.1 Biostatistical tools are appropriately utilized in data collection.	Identify tools for statistical data collection and describe main methods of collecting statistical data	Identify tools for statistical data collection, describe main methods of collecting statistical data and develop tools for data collection	Identify tools for statistical data collection, describe main methods of collecting statistical data, develop and use tools for data collection
3.3.3.1 Basic statistical methods are correctly utilized in compiling health data	Compile data using appropriate statistical methods	Explain methods to categorize statistical data and compile data using appropriate statistical methods	Explain methods to categorize statistical data, identify levels of measurement and compile data using appropriate statistical methods
3.3.4.1 HMIS tools are utilized appropriately in	Explain methods of capturing health data, describe and use	Explain methods of capturing health, importance of HMIS tools	Explain methods of capturing health, importance of HMIS tools, methods used in minimizing errors

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
collecting health data	HMIS tools in collecting health data	and use HMIS tools in collecting health data	during data collection and use HMIS tools in collecting health data
3.3.4.2 Safety, privacy and confidentiality are correctly maintained during utilization of data from different sources	Identify sources of health data and explain the importance of maintaining safety, privacy and confidentiality in managing health data	Identify sources of health data, explain the importance of maintaining safety, privacy and confidentiality in managing health data and determine data storage requirements	Identify sources of health data, explain the importance of maintaining safety, privacy and confidentiality in managing health data, determine data storage requirements and store data
3.3.5.1 Methods and stages of analyzing data are correctly described	Define data analysis, identify data to be analysed, methods for data analysis and describe data entry process	Define data analysis, identify data to be analysed, methods for data analysis, describe data entry and cleaning process	Define data analysis, identify data to be analysed, methods for data analysis, describe data entry, cleaning and summarization process
3.3.6.1 Skills of data analysis and data presentation are correctly demonstrated	List tools for data analysis, use different methods and tools to analyze and present data	List tools for data analysis, explain and use different methods and tools to analyze and present data	List tools for data analysis, explain and use different methods and tools to analyze and present data, describe the need for effective presentation
3.3.7.1 Data analysis using HMIS database are correctly performed.	Summarize data and generate reports for local consumption	Summarize data, generate reports for local consumption and different stakeholders	Summarize data, generate reports for local consumption and different stakeholders, use the information to determine health needs
3.3.8.1 Process of disseminating information is correctly described	Explain process of information dissemination	Identify information for dissemination and explain process of information dissemination	Identify information for dissemination and explain process and importance of information dissemination
3.3.8.2 Roles of information in improving	Identify the users of information and importance of	Identify the users of information and importance of health	Identify the users of information and importance of health information in improving health services,

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
health care services are appropriately described	health information in improving health services	information in improving health services, use skills of communication to establish message and disseminate information	use skills of communication to establish message and disseminate information, describe levels of information flow and feedback mechanism
3.4.1.1 Principles of managing an emergency and disaster are correctly described.	Define an emergency and disaster, identify emergency conditions and list principles of managing emergency	Define an emergency and disaster, identify disaster and emergency conditions, list principles of managing emergency and disaster	Define an emergency and disaster, identify disaster and emergency conditions, list principles of managing emergency and disaster, and explain phases in managing a disaster
3.4.2.1 Emergency preparedness are appropriately planned.	Define emergency preparedness, identify resources for emergency preparedness, mobilize resources for emergency preparedness and prepare health facility to handle an emergency	Define emergency preparedness, identify resources for emergency preparedness, mobilize resources for emergency preparedness, prepare health facility to handle an emergency and identify stakeholders for emergency preparedness	Define emergency preparedness, identify resources for emergency preparedness, mobilize resources for emergency preparedness, prepare health facility to handle an emergency, identify stakeholders for emergency preparedness, establish emergency preparedness team and network
3.4.3.1 Victims of disasters and emergencies are correctly managed	Identify resources, perform quick assessment , identify risk conditions and perform life saving measures to victim of disaster/ emergency	Identify resources, perform quick assessment , identify risk conditions and perform life saving measures to victim of disaster/ emergency, provide referral	Identify resources, perform quick assessment , identify risk conditions and perform life saving measures to victim of disaster/ emergency, provide referral and establish disaster network
4.1.1.1 Common methods of vector control to prevent	Define vector and identify different types of vectors of	Define vector, identify different types of vectors of medical	Define vector, identify different types of vectors of medical importance, control measures, limitations

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
disease are appropriately described	medical importance	importance and control measures	and delimitations of each control measure
4.1.2.1 Challenges, health related acquired infection and post exposure prophylaxis protocol are correctly described	Describe overview and challenges of infection prevention and control.	Describe overview and challenges of infection prevention and control and post-exposure prophylaxis	Describe overview and challenges of infection prevention and control, health related acquired infections (HAIs) and post-exposure prophylaxis
4.1.2.2 Principles of infection prevention and control are appropriately utilized to prevent infections.	Use appropriate hand hygiene techniques, proper personal protective equipment, decontaminate equipment and demonstrate procedures of waste disposal.	Use appropriate hand hygiene techniques, proper personal protective equipment, decontaminate equipment, demonstrate procedures of waste disposal and prepare solution for decontamination and disinfection	Use appropriate hand hygiene techniques, proper personal protective equipment, prepare solution and decontaminate equipment, sterilize, prepare skin for surgical intervention and dispose waste.
4.1.3.1 5S strategy is appropriately utilized for improving quality of health services.	Describe concept of 5S, aims, targets and apply 5S strategy in provision of health services	Describe concept of 5S, aims, targets and apply 5S strategy in provision of health services	Describe concept of 5S, aims, targets, TQ-KAIZEN, factors for successful of 5S and apply 5S strategy in provision of health services
4.1.4.1 Strategies to improve environmental sanitation are appropriately developed.	Describe occupation hazards in health care settings, identify household waste disposal and provide community education on hygiene to prevent infection in household	Describe occupation hazards in health care settings, household waste disposal, sources of water supply and contamination and provide community education on hygiene to prevent infection.	Describe occupation hazards in health care settings, household waste disposal, sources of water supply and contamination, provide community education on hygiene to prevent infection and treat water at small and large scale.
4.1.5.1 Preventive measures for nutritious	Conduct health education on balanced diet	Conduct health education on balanced diet and advice on use of	Conduct health education on balanced diet, advice on use of locally available food and prepare

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
disorders are correctly planned		locally available food	nutritious diet.
4.2.1.1 Structural organization and functions of human body are correctly described.	Describe body region, anatomical plains, structure and component of cell and structure and functions of connective tissue.	Describe body region, anatomical plains, structure and component of cell, structure and functions of connective tissue, muscle and bones.	Describe body region, anatomical plains, structure and components of cell, structure and functions of connective tissue, muscle, bones, nerve and different types of body movement.
4.2.2.1 Structure and function of blood and blood forming organs are correctly described	Describe plasma, different types of blood groups, function of blood and production of red blood cells.	Describe plasma, different types of blood groups, function of blood and production of red, white and platelets blood cells.	Describe plasma, different types of blood groups, function of blood and production of red, white and platelets blood cells, structure and function of spleen.
4.2.3.1 Structure and functions of body fluid, lymph and lymphatic system are appropriately described	Describe the constituents of body fluid compartments and draining system of the lymph.	Describe the constituents of body fluid compartments, lymph and draining system of the lymph.	Describe the constituents of body fluid compartments, lymph and function of lymphatic system and its draining system.
4.3.1.1 Structural organization and functions of skull and vertebral column are correctly described.	Describe the structural organization of skeleton	Describe the structural organization of skeleton and functions of the skull	Describe the structural organization and functions of skull, and vertebral column
4.3.1.2 Structural organization and function of shoulder, upper limb and thoracic cage are correctly described.	Describe structural organization thoracic cage.	Describe structural organization of the upper limb bones and thoracic cage.	Describe structural organization and function of the upper limb bones and thoracic cage.

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
4.3.1.3 Pelvic girdle and lower limb bones structural organization and function are appropriately described	Describe the structure of the pelvic girdle and lower limb	Describe the structural organization of pelvic girdle and lower limb	Describe the structural organization and functions of pelvic girdle and lower limb
4.3.2.1 Structural organization and functions of muscles are appropriately described	Describe the muscles of head, neck, thoracic, upper limb and abdominal wall.	Describe the muscles of head, neck, thoracic, upper limb, abdominal wall, pectoral, vertebral column, pelvis, perineum and lower limb.	Describe and explain the functions of muscles of head, neck, thoracic, upper limb, abdominal wall, pectoral, vertebral column, pelvis, perineum lower limb.
4.3.3.1 Structural organization and functions of joints are appropriately described	Describe structural organization and types of joints	Describe structural organization, type, characteristics and functions of joints	Describe structural organization, characteristics, and functions of joints, types and range of movement at synovial joints
4.4.1.1 Structure and functions of cardiovascular system are correctly described.	Describe organization of the cardiovascular system	Describe structure and functions of the heart and organization of the cardiovascular system	Describe structure and functions of the heart, blood vessel and organization of the cardiovascular system
4.4.2.1 Structure and functional organization of cardiovascular system is correctly described	Describe the conducting system of the heart and blood circulation of head, neck upper limb, thorax and Pulmonary system	Describe the conducting system of the heart and blood circulation of head, neck, upper and lower limb, thorax, pulmonary system and pelvic.	Describe the conducting system of the heart and blood circulation of head, neck, upper and lower limb, thorax, pulmonary system pelvic and entero-hepatic circulation
4.4.2.2 Foetal circulation is appropriately described	Describe structural organization of foetal circulation	Describe structural organization and physiology of foetal circulation	Describe structural organization, physiology of foetal and conversion of foetal to infant circulation

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
4.4.3.1 Structure and functions of respiratory system are correctly described	Describe the structure of the upper and lower respiratory tract	Describe the structure and function of the upper and lower respiratory tract	Describe pleura and pleural cavity, structure and function of the upper and lower respiratory tract
4.4.3.2 Physiology of respiratory system is correctly described	Describe respiratory process.	Describe respiratory process and types of respiration.	Describe respiratory process, types of respiration, pulmonary volumes and capacities.
4.5.1.1 Structure and function of the gastrointestinal system are correctly described.	Describe the structure and functions of oral cavity, oesophagus, stomach, intestines and anal canal	Describe the constituent of the saliva, structure and functions of oral cavity, oesophagus, stomach, intestines and anal canal	Describe the constituent of the saliva, mechanism of swallowing, structure and functions of oral cavity, oesophagus, stomach, intestines and anal canal
4.5.2.1 Structure and function of the accessory organs of digestive system are described.	Describe structure and functions of the liver and gallbladder	Describe structure and functions of the liver, gallbladder and pancreas	Describe structure and functions of the liver, gallbladder, pancreas and production of pancreatic solutions
4.5.3.1 Major groups of nutrients and their functions are correctly described	Identify main groups of foods and describe function of proteins and carbohydrates.	Identify main groups of foods and describe function of proteins, carbohydrates and fats.	Identify main groups of foods and describe function of proteins, carbohydrates, fats, vitamins and minerals.
4.5.4.1 Carbohydrate, protein, lipids and vitamin metabolism are correctly described.	Describe metabolism, metabolism of carbohydrate and protein	Describe metabolism, metabolism of carbohydrate, protein and lipid.	Describe metabolism, metabolism of carbohydrate, protein, lipid and vitamin

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
4.6.1.1 Structure and functions of central nervous system are correctly described	Describe structural organization of the nervous system, brain, meninges and spinal cord.	Describe structural organization of the nervous system, brain, meninges, spinal cord, function of brain and cranial nerve.	Describe ventricular system and cerebrospinal fluid flow, structural organization of the nervous system, brain, meninges, spinal cord, function of brain and cranial nerve.
4.6.2.1 Structure and functions of autonomic and peripheral nervous system are correctly described.	Describe nerve plexuses, sympathetic and parasympathetic system, organization of peripheral nerve, structural composition of sensory and motor nerve tract of the spinal cord.	Describe nerve plexuses, sympathetic and parasympathetic system, organization of peripheral nerve, structural composition of sensory, motor nerve tract of the spinal cord and function of autonomic nervous system.	Describe nerve plexuses, sympathetic and parasympathetic system, organization of peripheral nerve, structural composition of sensory, motor nerve tract of the spinal cord, function of autonomic nervous system and organization of somatic and visceral parts of the nervous system
4.6.3.1 Structure and function of endocrine system are appropriately described	Describe structure and functions of pituitary, thyroid and parathyroid gland.	Describe structure and functions of pituitary, thyroid, parathyroid gland adrenal hormones and pancreatic islets hormones.	Describe structure and functions of pituitary, thyroid, parathyroid gland adrenal hormones, pancreatic islets hormones, local hormones and pineal body hormones.
4.6.4.1 Structure and functions of the sensory organs are correctly described	Describe the structure and function of ear, extra-ocular muscles, nose, skin and its appendages, eye and its adnexa and skin appendages.	Describe the structure and function of ear, extra-ocular muscles, nose, skin and its appendages, eye and its adnexa, skin glands and mechanism of hearing.	Describe the structure and function of ear, extra-ocular muscles, nose, skin and its appendages, eye and its adnexa, skin glands, mechanism of hearing and physiology of hearing and vision.
4.7.1.1 Structure and functions of urinary system are appropriately described	Describe the structure of the kidney, structural organization of urinary system and mechanism of micturation.	Describe the structure of the kidney, structural organization of urinary system, filtration process and mechanism of micturition.	Describe the structure of the kidney, structural organization of urinary system, filtration process, secretion and reabsorption and mechanism of micturition.
4.7.2.1 Structure and functions of male reproductive system are correctly described	Describe organization of male reproductive system, structure and functions of penis and secondary male characteristics.	Describe organization of male reproductive system, structure and functions of penis, seminal vesicles, prostate and bulbourethral glands, testes and secondary male characteristics.	Describe organization of male reproductive system, structure and functions of penis, seminal vesicles, prostate and bulbourethral glands, testes, secondary male characteristics and development, storage and transport of spermatozoa.
4.7.3.1 Structure and	Describe hormonal role and	Describe hormonal role and	Describe hormonal role and puberty in female,

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
functions of female reproductive system are correctly described	puberty in female, structure of non-lactating breast, ovary, perineum, external genitalia and physiology of endometrial cycle, ovulation and menstruation.	puberty in female, structure of non-lactating breast, ovary, perineum, external genitalia, physiology of endometrial cycle, ovulation, menstruation, structure and function of uterus and fallopian tube.	structure of non-lactating breast, ovary, perineum, external genitalia, physiology of endometrial cycle, ovulation, menstruation, structure and function of uterus, fallopian tube, formation of primordial follicles and follicular maturation.
5.1.1.1 Cellular growth, injury and adaptation are appropriately described	Describe the cell cycle, growth and injury.	Describe control of cell cycle, growth and injury.	Describe control of cell cycle, growth, injury and mechanism of cellular response and adaptation to injury.
5.1.2.1 Immune response toward noxious stimuli are appropriately described	Describe normal immune response and types of hypersensitivity.	Describe normal immune response and types of hypersensitivity and principles of immune diseases.	Describe normal immune response, types of hypersensitivity, and principles of immune diseases, autoimmune and immune deficiency diseases.
5.1.3.1 Process of inflammation and healing are appropriately described	Describe cardinal sign, types and basic phenomenon of acute and chronic inflammation.	Describe cardinal sign, types, main chemical mediator and basic phenomenon of acute and chronic inflammation.	Describe cardinal sign, types, main chemical mediator, basic phenomenon of acute and chronic inflammation, mechanisms of tissue healing, repair, outcome and complication of inflammation.
5.1.4.1 Cellular response to infectious and non-infectious agents in respiratory system are appropriately described	Describe the pathology and pathogenesis of the upper respiratory tract infections.	Describe the pathology and pathogenesis of the upper respiratory tract infections and pneumonia.	Describe the pathology and pathogenesis of the upper respiratory tract infections, pneumonia and pathology of bronchial tree.
5.1.5.1 Classification and pathogenesis of neoplasia are correctly described	Explain the nomenclature, classification of neoplasm and risk factors for cancer development	Explain the nomenclature, classification of neoplasm, risk factors for cancer development and causation of neoplasia	Explain the nomenclature, classification of neoplasm, risk factors for cancer development, causation of neoplasia and basic principles of cancer prevention and control.
5.1.6.1 Classification and	Describe the classification,	Describe the classification, genetic	Describe the classification, genetic mutation and

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
pathogenesis of genetic conditions are correctly described	genetic mutation and pathogenesis of disease related to gene mutation	mutation and pathogenesis of disease related to gene mutation and multifactorial inheritance.	pathogenesis of disease related to gene mutation, multifactorial inheritance arising from chromosomal aberration.
5.1.7.1 Pathogenesis of diseases caused by Chemical, environmental and nutritional factors are appropriately described	Describe pathogenesis of diseases caused by air pollution, tobacco product use, alcohol, chemical and drug related diseases.	Describe pathogenesis of diseases caused by nutritional, dietary, air pollution, tobacco product use, alcohol, chemical and drug related diseases.	Describe relationship of diet and cancer, pathogenesis of diseases caused by nutritional, dietary, air pollution, tobacco product use, alcohol, chemical, drug related diseases.
5.1.8.1 Nutritional disorders are correctly described.	Describe different types of nutritional disorders.	Describe and distinguish different types of nutritional disorders.	Describe and distinguish different types of nutritional disorders and plan prevention for nutritional disorders.
5.2.1.1 Knowledge of bacteria and fungi are correctly applied for diagnosis and prevention of diseases	Describe Gram positive, Gram negative bacteria and acid fast bacilli.	Describe Gram positive, Gram negative bacteria, acid fast bacilli and fungus of medical importance.	Describe Gram positive, Gram negative bacteria, acid fast bacilli, spirochaete and fungi of medical importance.
5.2.2.1 Knowledge of viruses of medical importance is appropriately applied for diagnosis and prevention of diseases	Describe virus affecting immune system, transmitted through inhalation and faecal-oral	Describe virus affecting immune system, transmitted through bite, inhalation, faecal-oral and vector.	Describe virus affecting immune system, transmitted through bite, inhalation, faecal-oral, vector and those causing haemorrhagic diseases.
5.2.3.1 Knowledge of vector of medical importance is appropriately	Describe vector, ecto-parasite and mode of diseases transmission caused by	Describe vector, ecto-parasite, life cycle and mode of diseases transmission caused by vectors	Describe vector, ecto-parasite, life cycle, mode of diseases transmission caused and control measures of vectors.

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
applied to diagnose and prevent diseases	vectors.		
5.2.4.1 Knowledge of parasites of medical importance is correctly applied for disease diagnosis, prevention and control.	Describe intestinal nematodes, blood parasites trematodes and protozoa of medical importance	Describe intestinal nematodes, blood parasites trematodes, cestodes and protozoa of medical importance	Describe trematodes, blood parasites, cestodes, protozoa of medical importance, intestinal and tissue nematodes
5.3.1.1 Basic laboratory diagnostic procedures for disease diagnosis are correctly described	Explain the rapid test for Malaria, HIV and wet preparation for stool and urine for Schistosoma ova.	Explain the rapid test for Malaria, HIV, Hepatitis B&C, Syphilis and wet preparation for stool and urine for Schistosoma ova.	Explain the rapid test for Malaria, HIV, Hepatitis B&C, Syphilis, wet preparation for stool, urine for Schistosoma ova, Giemsa staining technique, Field staining and Ziehl-Neelsen staining and Gram stain.
5.3.2.1 Laboratory equipment, warning signs, chemical and reagents are appropriately described.	Name different types of instruments and equipment for common laboratory procedures and explain international warning signs/icons	Identify different chemicals and reagents used in the laboratory, Name different types of instruments and equipment for common laboratory procedures and explain international warning signs/icons	Identify parts of the microscope, different chemicals and reagents used in the laboratory, name different types of instruments and equipment for common laboratory procedures and explain international warning signs/icons
5.3.3.1 Basic laboratory procedures are performed according to SOP/protocol	Explain to the patients about the laboratory procedure to be undertaken, collect specimen, label, dispatch, perform laboratory test for Haemoglobin HIV, Malaria parasite, stool, urine, sputum, interpret results and inform the	Explain to the patients about the laboratory procedure to be undertaken, collect specimen, label, dispatch, perform laboratory test for blood grouping (ABO & Rh), stool, urine, sputum, interpret results and inform the patient.	Explain to the patients about the laboratory procedure to be undertaken, collect specimen, label, dispatch, perform laboratory test for blood grouping (ABO & Rh), stool, urine, sputum, Hepatitis B&C, interpret results and inform the patient.

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
	patient.		
5.3.4.1 Basic patient care procedures are performed according to standards.	Explain examination procedure to the patient, prepare beds for different medical and surgical conditions, position patient on bed/table for examination, take and interpret vital signs, perform basic lifesaving procedures, wound dressing, urethral catheterization and administer medications.	Explain examination procedure to the patient, prepare beds for different medical and surgical conditions, position patient on bed/table for examination, take and interpret vital signs, perform basic lifesaving procedures, wound dressing, urethral catheterization, administer medications and provide care for pre-operative and post-operative.	Explain examination procedure to the patient, prepare beds for medical conditions, position patient on bed/table for examination, take and interpret vital signs, perform basic lifesaving procedures, wound dressing, urethral catheterization, administer medications and provide care for pre and post-operative and unconscious patient using standard nursing procedures.
5.3.5.1 Physical examination and interpretation of clinical findings are performed according to standards	Prepare examination tools, maintain patient's privacy, confidentiality, and perform general and systemic examination.	Prepare examination tools, maintain patient's privacy, confidentiality, perform general and systemic examination and interpret findings.	Prepare examination tools, maintain patient's privacy, confidentiality, perform general and systemic examination, record, interpret and maintain confidentiality of findings.
6.1.1.1 Principles of entrepreneurship are appropriately described	Define entrepreneurship, differentiate between entrepreneurship, entrepreneur and enterprise, explain the importance of entrepreneurship	Define entrepreneurship, differentiate between entrepreneurship, entrepreneur and enterprise, explain the importance of entrepreneurship and states the functions and characteristics of entrepreneurs	Define entrepreneurship, differentiate between entrepreneurship, entrepreneur and enterprise, explain the importance of entrepreneurship, states the functions and characteristics of entrepreneurs, describe different areas where entrepreneurship can be applied
6.1.2.1 Sources of business financing are appropriately described	Identify types and sources of business financing	Identify types and sources of business financing and list their advantages and disadvantages	Identify types and sources of business financing, list their advantages and disadvantages, explain factors governing the choice between different

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
			sources of funds
6.1.3.1 Principles of entrepreneurship are appropriately utilized to establish business	Define the term entrepreneurial organization/business, describe factors for promoting entrepreneurial activities, identify factors to consider in starting a business	Define the term entrepreneurial organization/business, describe factors for promoting entrepreneurial activities, identify factors to consider in starting a business, and explain the importance of creating the entrepreneurial environment within the Organization	Define the term entrepreneurial organization/business, describe factors for promoting entrepreneurial activities, identify factors to consider in starting a business, explain the importance of creating the entrepreneurial environment within the organization and develop a business plan
6.1.4.1 Entrepreneurship skills are correctly applied in health service delivery	Identify types of customers and entrepreneurial opportunities in the health care field	Identify types of customers and entrepreneurial opportunities in the health care field, describe entrepreneurship skill needed in health care services	Identify types of customers and entrepreneurial opportunities in the health care field, describe entrepreneurship skill needed in health care services and barriers to health care entrepreneurship
6.2.1.1 Skills of knowing and living with oneself are appropriately demonstrated	Define self-awareness, self-esteem, assertiveness, & emotion, state the importance of self-awareness, high self-esteem, identify the values and indicators of skills of knowing and living with oneself	Define self-awareness, self-esteem, assertiveness, emotion, passive & aggressive behaviour, state the importance of self-awareness and high self-esteem, identify situations which require assertiveness, describe the values and indicators of skills of knowing and living with oneself	Define self-awareness, self-esteem, assertiveness, emotion, passive & aggressive behaviour, state the importance of self-awareness and high self-esteem, identify situations which require assertiveness, describe the values and indicators of skills, and apply strategies of coping with emotions & stress
6.2.2.1 Skills of knowing and living with others are appropriately described	Describes the various types of relationships, identify factors which influence relationship	Describes the various types of relationships, identify factors which influence relationship	Describes the various types of relationships, identify factors which influence relationship formation, values and indicators of healthy

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
	formation, values and indicators of healthy relationships and positive peer influence	formation, values and indicators of healthy relationships and positive peer influence, explains the importance of negotiation and requirements for effective negotiation	relationships and positive peer influence, explains the importance of negotiation and requirements for effective negotiation, identify causes, effects and strategies for conflict resolution
6.2.3.1 Life skills are correctly demonstrated for making effective decisions.	Explains the meaning, importance and obstacles of critical & creative thinking, describes the process of decision making	Explains the meaning, importance and obstacles of critical & creative thinking, describes the process of decision making, identify the values and indicators of effective decision making	Explains the meaning, importance and obstacles of critical & creative thinking, describes the process of decision making, identify the values and indicators of effective decision making, explains the meaning of problem solving and relate skills of decision making to problem solving
6.2.4.1 Life skills are appropriately demonstrated in the world of work	Describe life skills required in the world of work	Describe life skills required in the world of work, identify different alternatives for earning a living, and explains how different life skills can be important in earning a living	Describe life skills required in the world of work, identify different alternatives for earning a living, explains how different life skills can be important in earning a living, and identify the life skills one require to become financially independent
6.3.1.1 Concepts and philosophy of customer care are correctly described	Define the terms; customer, customer care, and customer satisfaction, describe the characteristics of good customer service and factors for customer satisfaction	Define the terms; customer, customer care, and customer satisfaction, describe the characteristics of good customer service and factors for customer satisfaction, list the types and key elements of customer care	Define the terms; customer, customer care, and customer satisfaction, describe the characteristics of good customer service and factors for customer satisfaction, list the types and key elements of customer care, outline and explain the basic need of customer
6.3.2.1 Customer service principles and techniques	Describe principles and techniques used in providing	Describe principles and techniques used in providing quality customer	Describe principles and techniques used in providing quality customer care, explain the

Assessment Criteria	Benchmarking		
	A learner has: Knowledge /skills to/attitude		
	Satisfactory	Good	Excellent
are appropriately described	quality customer care	care, and explain the importance of first impression on customer service	importance of first impression and list the steps needed to begin problem solving in customer care
6.3.3.1 Skills of customer care are correctly demonstrated to improve quality of service	Define the terms; customer, customer care, and customer satisfaction, describe the characteristics of good customer service and factors for customer satisfaction	Define the terms; customer, customer care, and customer satisfaction, describe the characteristics of good customer service and factors for customer satisfaction, list the types and key elements of customer care	Define the terms; customer, customer care, and customer satisfaction, describe the characteristics of good customer service and factors for customer satisfaction, list the types and key elements of customer care, outline and explain the basic need of customer

2.13.0 DESCRIPTION OF MODULES

2.13.1 Description of module I

2.13.1.1 Module Code: CMT04101

2.13.1.2 Module Name: Communication Skills

2.13.1.3 Number of Credits: 5

2.13.1.4 Sub-Enabling Outcomes:

2.1.1 Describe principles of effective communication process

2.1.2 Describe process of effective communication in delivering health care

2.1.3 Demonstrate skills of effective communication in interacting with child and adolescents

2.1.4 Demonstrate skills of effective communication in interacting with people with speech, hearing, mental and visual disabilities.

2.13.1.5 Pre-requisite module: None

2.13.1.6 Learning context: This module will be conducted through lectures discussion, group discussion, role plays case studies, assignment (practical & written)

2.13.1.7 Learning Materials and Teaching Aid: Books, journals, hand-outs, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers

2.13.1.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 20%

Practical 15%

Assignment 5%

Semester examination 60%

Written 30%

Practical 30%

2.13.1.9 Key References:

Adler, R. B., & Rodman, G. R. (2006). *Understanding human communication*. New York: Oxford University Press. Barnad, S. (2001) *Writing, Speaking and Communication skills for Health Professionals* Yale University Press

Koprowska, J. (2014). *Communication and interpersonal skills in social work*. Learning Matters.

Kurtz, S. M., Silverman, D. J., Draper, J., van Dalen, J., & Platt, F. W. (2005). *Teaching and learning communication skills in medicine*. Oxford: Radcliffe Pub.

Lloyd, M., & Bor, R. (2009). *Communication skills for medicine*. Elsevier Health Sciences

2.13.2 Description of Module II

2.13.2.1 Module Code: CMT04102

2.13.2.2 Module Name: Anatomy and Physiology I

2.13.2.3 Number of Credits: 14

2.13.2.4 Sub-Enabling Outcomes:

- 4.2.1 Describe structural organization and functional of human body
- 4.2.2 Describe structure and functions of blood and blood forming organs.
- 4.2.3 Describe body fluid, structure and functions of lymph, lymphatic system
- 4.4.1 Describe structure and function of cardiovascular system
- 4.4.2 Describe functional organization of cardiovascular system
- 4.4.3 Describe structure and function of respiratory system
- 4.5.1 Describe structure and function of gastro intestinal system
- 4.5.2 Describe structure and function of accessory organs of digestive system.
- 4.6.3 Describe structure and functions of endocrine system
- 4.7.1 Describe structure and function of urinary system

2.13.2.5 Pre-requisite module: None

2.13.2.6 Learning context: This module will be conducted through lectures discussion, group discussion, simulation, and assignment (practical & written)

2.13.2.7 Learning Materials and teaching aids: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers, models,

2.13.2.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 20%

OSPE 15%

Assignment 5%

Semester examination 60%

Written 30%

OSPE 30%

2.13.2.9 Key References:

Ganong, W. F., & Barrett, K. E. (2005). *Review of medical physiology* (Vol. 21). New York New York: McGraw-Hill Medical.

Hall, J. E. (2010). *Guyton and Hall textbook of medical physiology*. Elsevier Health Sciences.

Waugh, A., & Grant, A. (2014). *Ross & Wilson anatomy and physiology in health and illness*. Elsevier Health Sciences.

Marieb, E. N., & Hoehn, K. (2010). *Human anatomy & physiology*. Pearson Education.

Scanlon, V. C., & Sanders, T. (2014). *Essentials of anatomy and physiology*. FA Davis.

Martini, F. H., Bartholomew, E. F., Ober, W. C., Garrison, C. W., Welch, K., & Ralph.

Hutchings. (2013). *Essentials of anatomy & physiology*. Pearson.

2.13.3 Description of Module III

2.13.3.1 Module Code: CMT04103

2.13.3.2 Name: Environmental Health

2.13.3.3 Number of Credits: 7

2.13.3.4 Sub-Enabling Outcomes:

- 4.1.1 Describe common methods of vector control to prevent disease
- 4.1.2 Utilize principles of infection prevention and control to prevent infections.
- 4.1.3 Utilize 5S strategy to improve quality of health services.
- 4.1.4 Develop strategies to improve environmental sanitation

2.13.3.5 Pre-requisite module: None

2.13.3.6 Learning context: This module will be conducted through lectures, lectures discussion, group discussion, and assignment (practical & written), field visit

2.13.3.7 Learning Materials: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers, field guide, log books

2.13.3.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 25%

Oral 10%

Assignment 5%

Semester examination 60%

Written 40%

Oral 20%

2.13.3.9 Key References:

Bagchi, A. (2004). *Design of landfills and integrated solid waste management*. John Wiley & Sons.

Hoornweg, D., & Bhada-Tata, P. (2012). *What a waste: a global review of solid waste management*.

Jacquiline Vaugh (2008); *Waste management. A reference handbook*.

Joseph A, Salvato, P.E (2010); *Environmental Engineering and Sanitation*. Inter science Pub

Pencheon, D., Guest, C., Melzer, D., Gray, J. M., Korkodilos, M., Wright, J. & Gelletlie, R. (2002). *Oxford handbook of public health practice*.

Pichtel, J. (2005). *Waste management practices: municipal, hazardous, and industrial*. CRC Press.

Shah, K. L. (2000). *Basics of solid and hazardous waste management technology*.

2.13.4 Description of Module IV

2.13.4.1 Module Code: CMT04104

2.13.4.2 Name: Microbiology, Parasitology and Entomology

2.13.4.3 Number of Credits: 10

2.13.4.4 Sub-Enabling Outcomes:

5.2.1 Apply knowledge of bacteria and fungi for diagnosis and prevention of diseases

5.2.2 Apply knowledge of viruses of medical importance for diagnosis and prevention of diseases

5.2.3 Apply knowledge of vector of medical importance to diagnose and prevent diseases

5.2.4 Apply knowledge of parasite of medical importance for disease diagnosis, prevention and control.

2.13.4.5 Pre-requisite module: None

2.13.4.6 Learning context: This module will be conducted through lectures, lectures discussion, group discussion, role plays, assignment (practical & written)

2.13.4.7 Learning Materials: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers

2.13.4.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 25%

Oral 10%

Assignment 5%

Semester examination 60%

Written 40%

Oral 20%

2.13.4.9 Key references:

Baker, F. J., & Silvertown, R. E. (2014). *Introduction to medical laboratory technology*. Butterworth-Heinemann.

Garcia, L. S. (2009). *Practical guide to diagnostic parasitology*. American Society for Microbiology Press.

Greenwood, D., Slack, R. C., Barer, M. R., & Irving, W. L. (2012). *Medical Microbiology: A Guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Diagnosis and Control. With STUDENT CONSULT Online Access*. Elsevier Health Sciences.

Mim, C., Doelcrell, H. M., Goering, R. V., Roitt, I., Derek, W., & Zuckerman, M. (2004). *Medical microbiology. Structure*, 7, 7.

Monica Chessbrough. (1991): *Medical Laboratory manual for tropical countries*. Vol.1. 2nd Ed. ELBS

MW Service. (2008). *Medical entomology for Students*. Cambridge University Press.

2.13.5 Description of Module V

2.13.5.1 Module Code: CMT04105

2.13.5.2 Name: Medical Ethics and Professionalism

2.13.5.3 Number of Credits: 5

2.13.5.4 Sub-Enabling Outcomes:

2.2.1 Describe Ethics and Professionalism in medical practice

2.2.2 Describe the professional values in provision of quality health services

2.2.3 Describe patients' and health care provider rights in medical services

2.2.4 Describe health personnel obligations to the society

2.3.1 Describe ethical dilemmas and ethical issues in special situations in medical practice

2.3.2 Describe rules of law governing human rights in providing health services

2.3.3 Describe legal aspect governing disclosure of health information

2.13.5.5 Pre-requisite module: None

2.13.5.6 Learning context: This module will be conducted through lectures, lectures discussion, group discussion, role plays, assignment (practical & written)

2.13.5.7 Learning Materials: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers

2.13.5.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 25%

Oral 10%

Assignment 5%

Semester examination 60%

Written 40%

Oral 20%

2.12.5.9 Key references

British Medical Association. (2001). *the medical profession and human rights: handbook for a changing agenda*. Zed Books.

Darr, K. (2005). *Ethics in health services management*. Health Professions Press.

Hébert, P. C. (2009). *Doing right: a practical guide to ethics for medical trainees and physicians*.

Medical Ethics in Medical profession; Tanganyika medical Council

Mason, J. K. (2005). *Mason & McCall Smith's law and medical ethics*.

Oyebode, J. R. (2008). *Death, dying and bereavement. Handbook of the clinical psychology of ageing, 75-94*.

2.13.6 Description of Module VI

2.13.6.1 Module Code: CMT04106

2.13.6.2 Name: Nutrition

2.13.6.3 Number of Credits: 5

2.13.6.4 Sub-Enabling Outcomes:

4.5.3 Describe major groups of nutrients and their functions in human body

4.5.4 Describe metabolism of carbohydrate, protein, lipids and vitamin

5.1.8 Describe nutritional disorders

4.1.5 Plan preventive measures for nutritional disorder

2.13.6.5 Pre-requisite module: None

2.13.6.6 Learning context: This module will be conducted through lectures, lectures discussion, group discussion, role plays, assignment (practical & written)

2.13.6.7 Learning Materials: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers

2.13.6.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 25%

Practical 10%

Assignment 5%

Semester examination 60%

Written 40%

Oral 20%

2.13.6.9 References:

Jacobs, D. R., Gross, M. D., & Tapsell, L. C. (2009). Food synergy: an operational concept for understanding nutrition. *The American journal of clinical nutrition*, 89(5), 1543S-1548S.

King, F. S., & Burgess, A. (1993). *Nutrition for developing countries* (pp. 165-188). New York: Oxford University Press.

Whitney, E., & Rolfes, S. R. (2007). *Understanding nutrition*. Cengage Learning.

Adair, J. (2007). *The Art of Creative Thinking: How to Be Innovative and Develop Great Ideas*. Philadelphia: Kogan Page Publishers.

Windrum, P. (2008). *Innovation in Public Sector Services: Entrepreneurship, Creativity and Management*. Chltenham (UK): Edward Elgar Publishing.

2.13.9 Description of Module IX

2.13.9.1 Module Code: CMT04209

2.13.9.2 Name: Basic Clinical Laboratory

2.13.9.3 Number of Credits: 8

2.13.9.4 Sub-Enabling Outcomes:

5.3.1 Describe basic laboratory diagnostic procedures for disease diagnosis

5.3.2 Describe laboratory equipment, chemical reagents, biohazards and other icons,

5.3.3 Perform basic laboratory procedures for disease diagnosis.

2.13.9.5 Pre-requisite module: None

2.13.9.6 Learning context: This module will be conducted through, lectures discussion, group discussion, tutorial and assignment (practical & written)

2.13.9.7 Learning Materials: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers, microscope reagents and other lab supplies

2.13.9.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 15%

Practical 20 %

Assignment 5%

Semester examination 60%

Written 25%

Practical 35%

2.13.9.9 Key References:

Baker, F. J., & Silverton, R. E. (2014). *Introduction to medical laboratory technology*. Butterworth-Heinemann.

Carter J, Lema O, (1998), *Practical Laboratory Manual for Health Centers in Eastern*

Cook, G, (2000), *Manson's Tropical Diseases*, 22th Ed, WB Saunders Company Ltd, London,

David Greenwood, Richard C.B Slack, John Pentherer : *Medical Microbiology: A Guide to Microbial infections, immunity, laboratory diagnosis and Control*. 6th Ed. Churchill Livingstone

Jeffrey, H.C, Leach R, (1991), *Atlas of Medical Helminthology and Protozoology*, 3rd Ed,.. *Practical Laboratory Manual*

Monica Chessbrough. (1987): *Medical Laboratory manual for tropical countries*. Vol.1. 2nd Ed. ELBS

NACP, (2007)., HIV Rapid Test Training Package,

Joan Bocok : Microbiology for Nurses

Thomas C.G.A: Medical microbiology

WilCooks & Manson – Bahr. (1979): Manson'sTropical Diseases. 17th Ed. Bailliere Tindall

2.13.10 Description of Module X

2.13.10.1 Module Code: CMT04210

2.13.10.2 Name: Anatomy and Physiology II

2.13.10.3 Number of Credits: 14

2.13.10.4 Sub-Enabling Outcomes:

- 4.3.1 Describe structural organization and function of skeletal system
- 4.3.2 Describe structural organization and function of muscles
- 4.3.3 Describe structural organization and function of joints
- 4.6.1 Describe structure and function of central nervous system
- 4.6.2 Describe structure and functions of autonomic and peripheral nervous system
- 4.6.4 Describe structure and functions of sensory organs
- 4.7.2 Describe structure and function of male reproductive system
- 4.7.3 Describe structure and function of female reproductive system

2.13.10.5 Pre-requisite module: None

2.13.10.6 Learning context: This module will be conducted through lectures, lectures discussion, group discussion, role plays, assignment (practical & written)

2.13.10.7 Learning Materials: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers

2.13.10.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 20%

OSPE 15%

Assignment 5%

Semester examination 60%

Written 30%

OSPE 30%

2.13.10.9 Key References:

Ganong, W. F., & Barrett, K. E. (2005). *Review of medical physiology* (Vol. 21). New York New York: McGraw-Hill Medical.

Hall, J. E. (2010). *Guyton and Hall textbook of medical physiology*. Elsevier Health Sciences.

Marieb, E. N., & Hoehn, K. (2010). *Human anatomy & physiology*. Pearson Education.

Martini, F. H., Bartholomew, E. F., Ober, W. C., Garrison, C. W., Welch, K., & Ralph. Hutchings. (2013). *Essentials of anatomy & physiology*. Pearson.

Scanlon, V. C., & Sanders, T. (2014). *Essentials of anatomy and physiology*. FA Davis.

Waugh, A., & Grant, A. (2014). *Ross & Wilson anatomy and physiology in health and illness*. Elsevier Health Sciences.

2.13.11 Description of Module XI

2.13.11.1 Module Code: CMT04211

2.13.11.2 Name: Epidemiology, Biostatistics and emergency preparedness

2.13.11.3 Number of Credits: 10

2.13.11.4 Sub-Enabling Outcomes:

3.1.1 Differentiate determinant of health and diseases of public health importance

3.1.2 Describe epidemiological methods used to study disease in population.

3.1.3 Utilize different methods of diseases prevention and control

3.1.4 Describe the occurrence of an epidemic

3.3.1 Describe biostatistics concepts used in collecting health data

3.3.2 Utilize biostatistical tools used in data collection

3.3.3 Utilize basic statistical method in compiling health data

3.3.4 Utilize Health Management Information system in managing health data.

3.3.5 Describe different methods and stages of analyzing data

3.3.6 Demonstrate skills of data analysis and different methods of data presentation

3.3.7 Perform data analysis using HMIS database

3.3.8 Apply concept of information dissemination to improve health care services

3.4.1 Describe principles of managing an emergency and disaster

3.4.2 Plan for emergency preparedness

3.4.3 Provide first aid to victims of disasters and emergency

2.13.11.5 Pre-requisite module: resource management and Ethics and professionalism

2.13.11.6 Learning context: This module will be conducted through, lectures discussion, group discussion, assignment (practical & written), and field attachment

2.13.11.7 Learning Materials and Teaching Aid: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers

2.13.11.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 20%

Practical 15%

Assignment 5%

Semester examination 60%

Written 30%

Practical 30%

2.13.11.9 References:

Bland, M. (2000). *An introduction to medical statistics* (No. Ed. 3). Oxford University Press.

Dr. Arthur Bradley (2012) *T Bradley Handbook to practical disaster preparedness for the family* 3rd Edition

HMIS software manual

HMIS Training manual

James Hubbard (2013); Living Ready Pocket Manual First Aid Fundamental for survival

Tao Le et al, (2011); First Aid Basic Science 2th Edition

Johnson, B., & Christensen, L. (2008). *Educational research: Quantitative, qualitative, and mixed approaches*. Sage.

Killew J, et al, (2003), Lecture notes on Epidemiology and Research Methodology

Mitch Moremen (2013); Disasters Preparedness: Emergency Survival

Makwaya, et al,(1998), lecture notes in Biostatics

Oakes, J. M., & Kaufman, J. S. (Eds.). (2006). *Methods in social epidemiology* (Vol. 1). John Wiley & Sons.

R Bonita, R. Beaglehole, & T. Kjellström (2006) Basic epidemiology World Health Organization

Statistics in small doses

2.13.12 Description of Module XII

2.13.12.1 Module Code: CMT04212

2.13.12.2 Name: Computer Application

2.13.12.3 Number of Credits: 8

2.13.12.4 Sub-Enabling Outcomes:

1.3.1 Develop user and software requirement for managing finance, material and supplies

1.3.2 Install computer software to manage finance, material and supplies

1.3.3 Apply computer skills to manage finance, material and supplies

3.3.1 Describe information communication technology concepts in managing health data

3.3.2 Apply computer system in managing health data

3.3.3 Demonstrate skills of computer application in management of health information

2.13.12.5 Pre-requisite module: None

2.13.12.6 Learning context: This module will be conducted through, lectures discussion, group discussion, tutorial and assignment (practical & written)

2.13.12.7 Learning Materials: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers

2.13.12.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 15%

Practical 20%

Assignment 5%

Semester examination 60%

Written 25%

Practical 35%

2.13.12.9 References:

Cook, L.R. Computer Fundamentals –Understanding How they Work, 1sEdition, Ventage Press, 2001

Herniter, M.E. Personal Computer Fundamentals for Students, Hardware Windows 2000 Application, 2nd Edition, Prentice Hall, 2000

Morris M & Charles, M. Logol Computer Designer Fundamentals, #rd Edition, Prentice Hall, 2003

Steven Sagman (1999) Microsoft Office 2000 for Windows: Visual Quickstart Guide
Ed Bott and Carl Siechert (2001) Microsoft Windows XP Inside out

2.13.13 Description of Module XIII

2.13.13.1 Module Code: CMT04213

2.13.13.2 Name: Clinical Skills

2.13.13.3 Number of Credits: 14

2.13.13.4 Sub-Enabling Outcomes:

2.1.5 Take patient history using communication skills.

2.1.6 Build therapeutic relationship using the communication skills

5.3.4 Perform basic patient care procedures

5.3.5 Perform physical examination and interpret clinical findings

2.13.13.5 Pre-requisite module: None

2.13.13.6 Learning context: This module will be conducted through, lectures discussion, group discussion, role plays, simulation, demonstration and assignment (practical & written)

2.13.13.7 Learning Materials: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers, models, simulators, manikins

2.13.13.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 10%

Practical 15%

Assignment 5%

OSPE 10%

Semester examination 60%

Written 20%

Practical 30%

OSPE 10%

2.13.13.9 References:

Bickley, L., & Szilagyi, P. G. (2012). *Bates' guide to physical examination and history-taking*. Lippincott Williams & Wilkins.

Cunningham, F., Leveno, K., Bloom, S., Spong, C. Y., & Dashe, J. (2014). *Williams Obstetrics 24/E. E: McGraw Hill Professional*.

DeLaune, S., & Ladner, P. (2010). *Fundamentals of nursing*. Cengage Learning.

Mc Cluskey, D.R. (1990). Hutchison's clinical methods. *The Ulster medical journal*, 59 (1),99

Stewart, M. (2003). *Patient-centered medicine: transforming the clinical method*. Radcliffe Publishing.

Woerman, A. L., & Binder-Macleod, S. A. (1984). Leg Length Discrepancy Assessment: Accuracy and Precision in Five Clinical Methods of Evaluation*. *Journal of Orthopaedic & Sports Physical Therapy*, 5(5), 230-239.

2.13.14 Description of Module XIV

2.13.14.1 Module Code: CMT04214

2.13.14.2 Name: Pathology

2.13.14.3 Number of Credits: 10

2.13.14.4 Sub-Enabling Outcomes:

5.1.1 Describe cellular growth, injury and adaptation

5.1.2 Describe immune response towards noxious stimuli

5.1.3 Describe process of inflammation and healing

5.1.4 Describe cellular response to infectious and non-infectious agent in respiratory system

5.1.5 Describe the pathogenesis and classification of neoplasia

5.1.6 Describe classification and pathogenesis of genetic condition

5.1.7 Describe pathogenesis of diseases caused by environmental factors

2.13.14.5 Pre-requisite module: None

2.13.14.6 Learning context: This module will be conducted through lectures, lectures discussion, group discussion, and assignment

2.13.14.7 Learning Materials and Teaching Aids: Books, journals, writing boards, flip charts, OHP, multimedia projector, TV, video cassettes, audio cassettes, computers

2.13.14.8 Integrated Methods of Assessment:

Continuous assessment 40%

Written 25%

Oral 10%

Assignment 5%

Semester examination 60%

Written 40%

Oral 20%

2.13.14.9 References:

Kumar, V., Abbas, A. K., Fausto, N., & Mitchell, R. N. (2012). *Robbins basic pathology*. Elsevier Health Sciences.

Morini, M., Benelli, R., Giunciuglio, D., Carlone, S., Arena, G., Noonan, D. M., & Albin, A. (2000). Kaposi's sarcoma cells of different etiologic origins respond to HIV-Tat through the Flk-1/KDR (VEGFR-2): relevance in AIDS-KS pathology. *Biochemical and biophysical research communications*, 273(1), 267-271.

Pantanowitz, L., Carbone, A., & Stebbing, J. (2011). AIDS-Related Pathology. *Pathology research international*, 2011.

Singh, S., & Kent, R. D. (2000). *Singular's illustrated dictionary of speech-language pathology*. Singular Publishing Group.

Slauson, D. O., & Cooper, B. J. (2002). *Mechanisms of disease: a textbook of comparative general pathology* (No. Ed. 3). Mosby Inc..