

2012

Certificate in Medical Lab Technology



Post FSc One Year Modular Program leading to
Diploma/Associate Degree

Eligibility:

1. FSc Medical Technology
2. FSc Pre-Medical
3. FSc Pre-Engr with Matric (Science)
4. F.A with Matric (Science)

Keeping Alive, the Spirit of Life!



DEVELOPED IN COLLABORATION WITH

National Vocational & Technical Training Commission (NAVTTTC)
&
National Institute of Medical & Social Sciences (NIMSS)

Allied Health Sciences Board of Studies

1. Lt. Gen (Retd) Syed Abdul Ahad Najmi	Chairman
2. Dr. Mian Amer Masud	Member
3. Dr. Muhammad Maqsd Alam Bukhari	Member
4. Dr. Salman Faridi	Member
5. Col. (Retd) Dr. Pervaiz Saleem Qureshi	Member
6. Dr. Sheima Baig	Member
7. Dr. Jawaid Iqbal	Member
8. Col. (Retd) Dr. Farooq Khattak	Member
9. Col. (Retd) Dr. Azra Javed	Member
10. Muhammad Hussain Khan	Member
11. Dr. Ahsen Farooq	Member
12. Dr. Fauzia Zahid	Secretary



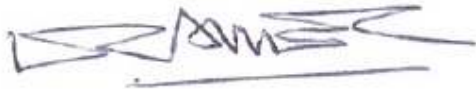
Preface

National Institute of Medical & Social Sciences (NIMSS) Islamabad is in process to provide state of art teaching in the field of medicine, dentistry, nursing, allied health sciences and post graduate studies. Considering the wide gap between the professional knowledge of the medics and the nurses/paramedics, it is deemed essential to commence paramedic technical courses. The College of Allied Health Sciences/NIMSS in collaboration with National Vocational & Technical Training Commission (NAVTTTC) intends to start one year certificate course (G-1) for Lab technicians, X-ray technicians and physiotherapists in February 2012. This is an exit program which desirably can be vertically integrated to the Second Year Diploma Program (G-2), onwards to Third Year Associate Degree (G-3) and finally to Fourth Year BSc Degree (G-4). The paramedics qualifying through these courses will meet the national as well as global demand for employment available both at the primary health care centers and tertiary health care centre.

The curricula have been designed to meet the international standards. It is based on credit hours with pivotal emphasis on acquiring competency based knowledge and skills, 60 % has been assigned to practicum being the major component of the curricula. Further, with advantage of the Institute of Online Learning (IOL) available to NIMSS, the distant learning for the theory interactive lectures has been designed. The students will be issued Laptops through which they will be able to learn/ acquire knowledge while at home. In addition, the practicum have been planned to be conducted close to the student's home. These curricula will facilitate the lesser privileged individuals to benefit from the program.

A team of experts representing Karachi, Quetta, Lahore and Islamabad were involved for the last three months. A group of specialist doctors and experienced technologists were involved in designing the curricula. In particular we would like to acknowledge the experts from the Liaquat National Hospital and Medical College Karachi, including Dr. Farah Deeba, Dr. Saad Saleem, Mr. Nasir Mansoor, Ms. Uzma Usman, Dr. Bushra Rehan and Dr. Jawaid Iqbal. Also intimately involved were Dr. Sheima Baig, Col. (Retd) Dr. Pervez Saleem Qureshi, Dr. Ahsen Farooq, Dr. Fauzia Zahid, Col. (Retd) Dr. Azra Javed, Mr. Qazi Habib, Ms. Sabeen Abid, Mr. Sanaullah Sanai and Mr. Jawad Akbar. We extend our gratitude to ED NAVTTC Mr. Tariq Shafi Chak and his team in particular Mr. Shahid Tarrar, Mr. Mohammad Nasir Khan and Ms. Rehana Tiwana, without their guidance and support the course may not have been a reality.

We welcome valid suggestions to add value to this endower.



Dr. Mian Amer Masud
CEO

Rationale

The purpose of this document is to introduce and implement structured training in clinical laboratory procedures with quality assurance. Subsequent to approval by the academic council of NIMSS, it will be forwarded to NAVTTC, after necessary authorization the curriculum will be formally inducted.

Program Description

The Medical Laboratory Technician program encompasses the performance and evaluation of scientific tests on body fluids. The results of laboratory tests determine the presence of disease, aid in treatment, and monitor therapy. This is a dynamic profession that changes as new medical knowledge is discovered. Medical Laboratory Technicians (MLT), have the technical expertise necessary to perform a wide variety of routine and specialized tests on patient specimens to help the physician in the diagnosis and treatment of disease. To do this, the MLT uses the latest biomedical instruments, often interfaced with computers to generate accurate, reliable tests results. It is the goal of this course of study to equip the students with the necessary knowledge and skills to perform competently in a medical laboratory in all areas of laboratory diagnosis. Students who graduate from this program of study are also equipped to sit for the American Society of Clinical Pathology International certification examination for Medical Laboratory Technician.

Health Care Problem

Negligence in laboratory procedures can lead to erroneous diagnosis and in turn incorrect treatment.

Importance of the Problem

The qualitative challenge includes; the deterioration in maintaining requisite laboratory standards along with professional obligations. Quantitatively the magnitude of the problem is directly proportional to inadequate training and inappropriate attitude and inversely proportional to knowledge.

Educational goals

Overall - By the end of training trainees students will be able to perform adequate clinical laboratory techniques properly with quality assurance.

Specifically the training will:

- Provide the instructive and clinical experience necessary to acquire knowledge in medical laboratory technology subjects.
- Ensure that, upon completion of the program, students are competent at the career entry level and have the knowledge and background to successfully prepare them for employment.
- Inculcate a sense of duty and professionalism while interacting with patients, their relatives, colleagues and other health care providers.
- Communicate effectively and professionally.
- Prepare them for team work.
- Impart sufficient technical knowledge to prepare them for employment.
- Understand the significance of continuing education.
- Impart professional honesty.

General Competencies

By the end of this program, the student should be able to:

- Demonstrate an understanding of the history of the clinical laboratory and the Professionalism desired in clinical laboratory personnel.
- Exhibit behavior consistent with the ethical practice of clinical laboratory medicine.
- Maintain confidentiality of all patients and test results.
- Demonstrate an appreciation for the special knowledge and talent of other members of the health care team.
- Explain the transmission of the AIDS (HIV) and Hepatitis HVB, HVC virus and state how the virus affects the Immune system.
- In addition to the HIV virus, name other pathogens that could be transmitted by blood or body fluids and demonstrate procedures to safely handle these specimens.
- Evaluate quality control values and fulfill the requirements of national and international laboratory standards.
- Safely process clinical specimens according to established procedures.
- Perform pipetting techniques with accuracy and safety.
- Operate basic laboratory equipment, such as microscopes, centrifuges and Spectrophotometers and automated analyzers safely and according to established procedures, using only necessary supplies to maximize resources.
- Correctly demonstrate standard isolation techniques, using only necessary supplies to maximize resources.
- Exhibit an understanding of safety hazards in the laboratory and demonstrate the proper techniques to avoid accidents.

- Take vital signs and perform POCT.
- Perform basic laboratory procedures in chemistry, hematology, urinalysis, immunohaematology, immunology and microbiology.
- Explain accreditation and certification.
- Identify and use basic medical terminology as it applies to the clinical laboratory.
- Use basic metric systems for laboratory procedures.

Skill levels

The skill level will be divided in to two; level I for initial six months and level II denotes competencies covered during second half of training.

Skill Level I

Demonstrates proficiency in basic lab skills.

Demonstrates knowledge of the essential components of equipment.

Demonstrates competency in working with chemicals and equipment.

Knows the procedure for incidence reporting of any untoward event like accidental spills, pricks or injury.

Skill Level II

Be able to work independently.

Demonstrates knowledge about hematology, chemical pathology, microbiology and basic histopathology tests.

Demonstrates sufficient knowledge about specimen dealing from reception to reporting.

Demonstrates quality control.

Demonstrates knowledge of requirements pertaining to retention of pathology specimens and records.

Demonstrates proficiency in handling and processing of infectious specimens.

Demonstrates full ability in disinfection, sterilization, waste management and incineration.

Demonstrate computer data management.

Educational Strategies:

On line Lecture
On line Discussion
Audio-Visual materials
Demonstration
Laboratory Practice
Field Trips

Textbooks:

Scanlon, Valerie; Sanders, Tina, Essentials of Anatomy and Physiology, Fourth Edition, 2003, FA Davis Company.

Linne, Jean Jorgenson; Ringsrud, Karen Munson, Clinical Laboratory Science; The basics and routine techniques, Fourth Edition, 1999, Mosby.

Stepp, Craig; Woods, Maryann, Laboratory Procedures for Medical Office Personnel, 1998.

Pommerville, Jeffrey, Alcomo's Laboratory Fundamentals of Microbiology, Seventh Edition, 2005.

Manual of laboratory medicine, Fourth Edition. Eds. Farooq A Khan, Suhaib A, Tahir AA, Agha Babar, Abbasi SA, Shahid J, Khadim MT, Aamer Ikram

Program Requirements, Examinations and Grading

Student Evaluation

Measurement

Formative:

- Quizzes after every lecture, 25%
- Discussion questions in chat room 25%
- Training assignments & Presentation 25%
- Tracking of Training by learning management system (LMS): 25%
Real Time onLine Tracking System

Summative:

- **Face to Face:** After each semester during face to face session written examinations will be given over lecture material and the accompanying laboratory exercises, and will comprehensively assess the student's knowledge of concepts, principles, techniques and procedures as related to the instructional material.
- **SCT:** Script Concordance Test to measure a student's progress in Problem Solving .The student will be required to explore internet and retrieve articles from professional journals.

Measurement of Practical work –

- **OSCE:** Objectively Structured Clinical Exams
Points are awarded for the successful completion of exercises as related to the specific objectives for each exercise through OSCE.

Peer & Self Assessment:

- Students Self Assessment form 50%
- Peer Assessment checklist 50%

Determination of Final Grade

a) 70 % of final grade

1. Formative Test: 70%
2. Summative Examination: 20%
3. Peer and self assessment: 10%

b) 30% of final grade

1. Completion of work OSCE
2. Two practical exams
3. Review of Safety Manual all exercises and study questions must be organized and turned In at end of the term, preferably in a binder or notebook, for validation by the Instructor.

Note:-

Incomplete assignments will receive grade "I". A student must have a passing average (70% or above) and have completed at least 80% of the course work.

Attendance Policy

Attendance is required at all times and arrival by the beginning of the class period is expected. Roll call will be taken at every class and practicum meeting. The student is required to notify an instructor if an absence is anticipated. If absences exceed 10 %, the student will be dropped from the course unless there are EXTREMELY extenuating circumstances. A student who is fifteen (15) minutes late is considered tardy. Three (3) tardies constitute one absence. It is the student's responsibility to keep track of his/her attendance record and all assignments, materials, examinations, etc., missed.

Failure or Dismissal from this Course Grading Scheme

A = 90-100%

B = 80-89%

C = 70-79%

D = 60-69%

F = 59% and below

- A. A minimum grade of “D” (60%) is required in both the lecture and laboratory components of this course to remain on the program.
- B. Any student may be dropped from this course due to excessive absences and/or consistently failing to meet class assignments, for disruptive conduct during lecture or lab or for displaying conduct detrimental to the ethics of laboratory practice.
- C. The instructors and lecturers understand that learning in group situations can be beneficial. However, each student is expected to demonstrate his/her own competency by doing his/her own work. Any student caught cheating in examinations, will be subject to disciplinary action, and possible withdrawal from the program.

Program Evaluation:

Research & Evaluation department will evaluate the program on the basis of student success rate and following feedbacks

A- Credit/ Contact hours:

Same as accepted internationally for face to face, on-line and Practicum

B- Student Evaluation:

Evaluation system is a confidential avenue for submitting honest, constructive feedback about the instructors and courses

i- Trainer evaluation

ii- Lecturer/Faculty evaluation

iii- Course evaluation

iv- PGY-1 Survey

C- Faculty Evaluation:

i- Self assessment form

ii- Peer Assessment checklist

iii- Course evaluation

Special Laboratory Requirement

- A. All laboratory exercises **must** be read **before** attending the laboratory period.
- B. Safety Regulations Blood, urine, and other biological specimens possibly containing pathogenic organisms Will be used in this course; therefore, the following precautions must be observed:
 1. Proper Hand washing Procedure
 - a. Wet hands and apply a small amount of an antiseptic soap (3-5 ml).

- b. Vigorously lather hands and rub together for at least 15 seconds.
- c. Wash well between fingers and up the wrists.
- d. Rinse well with a moderate stream of water in a downward motion.
- e. Dry with a paper towel and use the towel to turn off the faucet.

Dry Skin adequately to avoid dermatitis. Alcohol hand rinse or foam products may also be used for decontaminating the Hands whenever clean running water are not available. Frequent hand washing can be very damaging to the skin's normal protective Mechanisms by damaging or cracking skin, altering its pH, or changing its normal Flora. Recent studies suggest that frequent application of hand lotion may reduce this damage; lab personnel, therefore, are encouraged to use it. This may be difficult, however, as one should avoid applying hand lotion immediately after washing, right before giving direct patient care, or right before handling of sensitive instruments or equipment. Lotions might interfere with the residual action of the antimicrobial hand washing products.

2. Standard Precautions

Since medical history and examination cannot reliably identify the infectivity of all patients' blood and body fluids, standard precautions should be followed for all Patients. The concept of standard (universal) precautions was first introduced in 1987 by the Center for Disease Control (CDC) to decrease the occupational risks of blood-borne diseases such as AIDS and hepatitis B to healthcare workers. The application of standard precautions is continually evolving; all body fluids may soon be handled with the same precautions as blood. This further application is already occurring in some labs, and is known as Body Substance Isolation.

Job description:

Junior Laboratory Technician:

This is the beginning level, the technician works in a learning capacity while performing a range of lab technician assignments under close supervision.

Job Qualification:

One year Certificate in Medical Lab Technology

Knowledge, Skills, abilities:

Some knowledge in the area listed is required at the entry level, developing knowledge is required at the intermediate level, Considerable knowledge is required at experienced level, and thorough knowledge is required at the advanced level

- Knowledge of Laboratory test and analyses.
- Knowledge of Lab terminology and equipment.
- Knowledge of Lab safety precautions and hazard.
- Ability to perform Phlebotomy.
- Ability to perform handling samples and their proper transportation.
- Ability to communicate effectively.
- Ability to maintain record
- Knowledge of methods of preparing stains, media, solution.
- Responsible to dispatch report to the patient.

Course Outline

Duration:	1Year
Orientation	
Course #	Subject
OC-011	Basic Computer Skill
OC-012	English
OC-013	Ethics

Semester I

Codes	Courses	Credit Hrs
HGC-011	Public Health Care System & First Aid	2(1-1)
HGC-012	Anatomy & Physiology	3(1-2)
HGC-013	Medical Terminology	3(1-2)
LTC-010	Elementary Chemistry	2(1-1)
LTC-011	Lab Safety infection control and, Patient Sampling (Phlebotomy)	3(1-2)
HGC-018	Applied Computer Skills I	3(1-2)
	Sub Total	16(6-10)
HGC-015	Islamic Studies	1(1-0)
HGC-017	English I	1(1-0)
	Total Credit Hrs	18(8-10)

Semester II

Codes	Courses	Credit Hrs
HGC-018	Applied Computer Skills II	2(0-2)
LTC-012	Blood Banking Physiology and Body fluids	2(1-1)
LTC-013	Hematology & Clinical Hematology	2(1-1)
LTC-014	Body fluids and Clinical Chemistry	2(1-1)
LTC-015	Elementary Histopathology and Cytology	2(1-1)
LTC-016	Elementary Microbiology and Parasitology	4(2-2)
LTC-017	Elementary Virology and Immunology	3(1-2)
LTC-018	Principles of Laboratory Quality Management	1(1-0)
	Sub Total	18(8-10)
HGC-017	English II	1(1-0)
	Total	19(9-10)
	Total of Semester I & II	37(17-20)

Percentage Theory = 41 % and Practical = 59 % (Excluding Islamic Studies and English)

- Note 1:**
- i. "OC" represents Orientation Courses and carries no weightage
 - ii. "HGC" represents courses as per approved syllabus for HEC
 - iii. "PTC" represents technical courses with following description:

Note 2: According to Higher Education Commission (HEC) rules of credit hrs 1 credit hr is equal to 1 hr of face to face session/lecture every week for 18 weeks. Therefore 1 credit hr is equal to 18 hrs of face to face session/lectures. For internet learning 1 credit hr is equal to 3 hrs of internet session which will include 1.3 hours of lecture and 1.7 hrs of reading material, presentation, chat room discussion, quizzes.

Theory = 1 Credit hr = 18 hrs of lecture

Practical = 1 Credit hr = 36 hrs of Practicum

SEMESTER - I

Course Description

HGC-011
MODULE 1-A

Public Health Care System & First Aid

2(1-1)

A PUBLIC HEALTH – CLASS 1 Crd.hr = 18 hrs
B First Aid

Modules	Learning Units (LU)	Topics	Learner's Desired Outcomes	Recommended Methodology	Practicum	Skill Developed	Work Place	Duration	Scheduled Dates
<u>Module.1</u> <u>-B</u> Public Health	(LU-1) Introduction to Public Health	<ol style="list-style-type: none"> 1. Definition of Health and Wellness 2. Scope of Public Health 3. Policies & Ethics 4. Essential Services 5. Behavioral Sciences 6. Communication 7. Needs / Assessments 8. Determinants of Health Goals 	Awareness / Knowledge of Public Health in a community and the impact on human behavior, conceptual approach for primary health behavior for prevention of illness disease and other health conditions, role of community participation, provides incentive for consumers by development of programs.	LMS	Class Room, White Board	Able to construct ideas for development and programs of public health involving community regarding various disease,	Class	1 Hr	

	(LU-2) Health Infrastructure	<ol style="list-style-type: none"> 1. Role of AHP at different levels of health delivery system 2. Organizational Organ gram of the health infrastructure 3. Steps to achieve the goal / slogan “Health for all by the Year 2020” 4. Leading health indicators 5. Programming of Needs impact based module 6. Regional Health Indicators 	<p>The job description of the AHP will be more specified and authentic health delivery system will be a door step.</p> <p>Awareness to disease with communication to the relevant department will be more specified.</p> <p>Engaging community leaders or interested peoples who would be involved in improving health.</p> <p>Maintain cohabitation among the provinces and districts.</p>	LMS	Class Room, White Board	He will be able to recognize health indicators effectively and reporting to the concerned authorities	Class	1 Hr	
	(LU-3) Environmental Factors affecting health in a community and occupational health safety	<ol style="list-style-type: none"> 1. Composition of a Healthy Environment 2. Air Pollution Categories as noises/ water/ factories/ mills etc 3. Different types of waste disposable 	<p>Awareness to the public to utilize preventive measures to avoid hazards of environmental pollution, methods for the proper disposal of the waste, hazards in use of electronics / chemical material,</p>	LMS	Class Room, White Board	He will be able to guide people in safe disposal of the waste, he will be able to display charts on the methodology of waste disposal	Class	1 Hr	

		outside and hospitals 4. Importance of ventilation 5. Hazards of over crowding 6. Airborne diseases both communicable and non communicable 7. Diseases related to occupation in factories	precautionary measures in factories, display of charts related to various disease hazards. Importance of precautionary measures to be taken for health safety.						
	(LU-4) An account of water bourn diseases along with different sources of water and the impurities	1. Natural sources of water 2. Artificial sources of water 3. Impurities of water 4. Purification of the water 5. Types of water bourn diseases with prophylactic measures 6. Importance of hand wash both and methodology in the hospitals	Public awareness on hazard's of impure water. Methodology to purify water, this will help to evaluate the impact and control on health status.	LMS	Class Room, White Board	H will be able to demonstrate and also do himself in appropriate form of hand wash as recommended by WHO, will be able to control water bourn diseases by informing the people of methods related to water purification	Class	1 Hr	

		and at home on WHO guidelines.							
	(LU-5) Waste Management	<ol style="list-style-type: none"> 1. Introduction to the types of waste material 2. Introduction to different types of waste bourn diseases 3. Different methods of waste disposal and collection / transportation / recycling 4. Reuse of used medical materials in hospitals and nursing homes 5. Use of incinerators in the hospitals 6. Hazard's leading to the 	Improvement in the environmental hygiene leading to prevention of spread of Waste Bourne diseases, reutilization of waste after recycling in different forms, prevention of labor class from various health hazards related to working area, use of proper methodology for destroying the medical disposable material i.e syringes / gloves / Empty IV Fluids Bags / Urine Bags / Royal stubs etc	LMS	Class Room, White Board	Able to differentiate between infectious toxic and non toxic waste, he will be able to provisionally diagnose waste bourn diseases, he will be able to use proper methods to destroy medical waste material.	Class	2 Hrs	

		<p>infectious diseases due to improper waste disposal</p> <p>7. Precautionary measures to be taken by factories for waste disposal</p> <p>8. Precautionary measures to be taken by the laborer in factories and at construction sites</p>							
	(LU-6) Communicable and Non Communicable diseases	<p>1. Introduction to Communicable and Non Communicable Diseases</p> <p>2. Difference between Communicable</p>	The role of AHP is to aware the public of both communicable and non communicable diseases and to take precautionary measures at different levels and to educate	LMS	Class Room, White Board	He will be of the knowledge of both communicable and non communicable diseases and can give the guidelines to the	Class	3 Hrs	

		<p>le and Non Communicable Diseases</p> <ol style="list-style-type: none"> 3. Types of Diseases / sources / routes 4. Precautionary Measures 5. Public awareness through proper communication by media / banners / posters/ workshops 	<p>the community for adopting measures to prevent from these diseases.</p>			<p>community for the prevention from these diseases.</p>			
	<p>(LU-7) EPI (Expanded program of immunization)</p>	<ol style="list-style-type: none"> 1. Definition of EPI 2. Epidemiological Importance of EPI 3. Types of EPI as per lay down policy of WHO 4. Diseases preventable 	<p>AHP will be knowledgeable regarding the EPI program and will help in implementation by working as a leader, the successful EPI program will decrease infant / child / morbidity and mortality rate,</p>	LMS	Class Room, White Board	<p>EPI program will be very helpful to AHP in awareness to the community and its implementation through community leaders for a health society; he will be well</p>	Class	2 Hrs	

		<p>through EPI</p> <ol style="list-style-type: none"> 5. Advantages and Disadvantages of EPI 6. Cold chain process with preservation of vaccine in a specified temperature 7. Role of EPI in prevention of pandemics / epidemics 8. Display of Organogram in form of Chart at the working site for public awareness 9. Proper EPI cards format to be designed with proper registration 	<p>prevention of epidemic and endemics, door to door service will be provided by maintaining the record, follow up of the infant child EPI will be maintained as per policy.</p>			<p>equipped with the knowledge of various diseases preventable through EPI. Schedule EPI Cards will add to public to awareness, the important role of EPI in prevention of endemic, epidemic and pandemic.</p>			
--	--	---	--	--	--	--	--	--	--

	(LU-8) Family Planning and reproductive health	<ol style="list-style-type: none"> 1. Introduction of family planning 2. Needs and Assessment 3. Methods of family planning 4. Reproductive Health lessons in community groups 5. Pre marriage counseling in specified centers for family planning 6. Importance of breast feeding in family planning 7. Pre natal and post natal checkup to avoiding mishaps with proper 	Overview of the public health commitment to vulnerable population including child care, aging, person with disabilities and socio economically disadvantaged population, it will decrease the morbidity and mortality in child birth leading to healthy mother and healthy child.	LMS	Class Room, White Board	He will know the basic advantages and needs of family planning, will guide the couples on reproductive health by given the community lessons along with educating with family planning methods, pre marriage counseling will be helpful in reproductive health and importance of breast feeding family planning.	Class	2 Hrs	
--	--	--	---	-----	-------------------------	--	-------	-------	--

		booklet for follow up							
	(LU-9) Epidemiology	<ol style="list-style-type: none"> 1. Epidemiological Principles 2. Terminology of Epidemiology 3. Population Perspectives 4. Health Indicators 5. Public Health Surveillance 6. Types of Epidemiological Research 7. Vital Statistics 	Epidemiological survey will impact on mortality and morbidity from various acute chronic and physical disease condition which will be reflect the epidemiological and demographic transitions occurring in different areas in country, screening for early detection of diseases for social and medical management of diseases thus decreasing the mortality and morbidity rate, it will help in community orientation and the public health worker will be able to grasp and communicate the Epidemiology of a disease including	LMS	Class Room, White Board	He will be able to provide informative indicators of a community reflecting the health care system which can further fill up the gap in the health care. The health indicator statistic will be based on demographic epidemiological surveys and data.	Class	1 Hr	

			rates, risk factors, disease determination, causation and public health surveillance						
	(LU-10) Public Health Worker Preparedness and Disaster Management	<ol style="list-style-type: none"> Essential role of public health worker in preparedness for and response to natural or terrorism related disasters Management of the casualties at site with evacuation to the hospital 	The AHP with the cooperation of the public and trained paramedics for First Aid will be able to manage the site and evacuate the casualties to the nearest secondary and tertiary care hospitals.	LMS	Class Room, White Board	He will be able to do the situational analysis and take necessary managerial measures in the event of disasters.	Class	2 Hrs	
	(LU-11) Primary Health Care	<ol style="list-style-type: none"> Role of Primary Health care in curative / preventive/ therapeutic / diagnostic areas 	A public health worker (AHP) following the roles of PHC will help in leadership/ epidemiological surveillance/ community	LMS	Class Room, White Board	The AHP will be able to implement the Eight Elements of primary health care at various level in a community in the	Class	2 Hrs	

		<ol style="list-style-type: none"> 2. History of primary health care and its important role 3. The Eight Elements of PHC 4. PHC as health informative and indicator of a country 5. Health Education for methods and techniques in prevention and control of local endemic diseases and role of paramedics 6. Formulary of the basic essential drugs (EDL) required as per WHO 	<p>participation/ disease prevalence. Role of communication in behavioral sciences, record of health indicators, population growth.</p>			light of need and assessment.			
--	--	---	---	--	--	-------------------------------	--	--	--

Assessment – Public Health

Learning Units	Theory Days / Hrs	Workplace Days / Hrs	Recommended Formative Assessment	Recommended Methodology	Scheduled Dates
Topics LU-1 to LU-11			<ol style="list-style-type: none"> 1. MCQS based on objectives <ol style="list-style-type: none"> a) True / False b) Fill in the blanks c) Choose the correct answer d) Modify the sentence 2. Short Assignments on topics 3. Maintenance of Log book 4. Maintenance of the record and graphic chart displayed in BHU / RHU 5. Inter sector knowledge of any endemic and epidemic through communication 6. Demonstration of <i>chlorinometry</i> of water in specified village with gastrointestinal disorders 	Audio Visual Presentation White board with Flip charts presentation s. Observatory Visits to BHU/RHU/MCH Visit to water filtration plants /dept. visit to incinerator for hospital waste disposal, visit to health care international agency and observe the health programs being conducted in specified areas under the supervision of foreign health agencies.	

MODULE 1-B

A PUBLIC HEALTH
 B FIRST AID – PRACTICUM 1 CR HR = 36 HRS

Modules	Learning Units (LU)	Topics	Learner's Desired Outcomes	Recommended Methodology	Practicum	Skill Developed	Work Place	Duration	Scheduled Dates
Module.1-A First Aid	(LU-1) Introduction to First Aid	9. Definition 10. Responsibilities 11. Policies / Protocols 12. Record 13. Referral 14. Assessment	Respondent action will be defined according to policy with proper referral and onsite First Aid Treatment	Audio / Visual Aids Presentations	Hands on	Will be versed with meaning of first aid in medical emergency handling and disposal	Training Site	1 Hr	
	(LU-2) Techniques and Equipments used in First Aid	7. Introduction to First Aid Equipments in Emergency 8. Use of the Equipments in proper way 9. Maintenance of the equipments	Use of the right equipment with proper method as per emergency reporting for First Aid i.e. causality handling	Audio / Visual Aids Presentations	Hands on	He will be able to identify and the importance of medical instruments as air way, vital signs, splints, bandages,	Training Site	2 Hrs	

						cardiac crash trolley			
	(LU-3) Types of First Aid Emergencies / Casualties / Reporting	<ol style="list-style-type: none"> 1. Introduction to all topics related to life saving procedures i.e. Breathing and Circulation / Resuscitation for adult and child / Choking summary charts for both adult and child 2. Importance of open airway for cardio respiratory maintenance 3. Handling of unconscious adult and child 4. Resuscitation chart for both adult and child 5. Choking due to foreign body etc for both adult and child 	The AHP will be able to differentiate and diagnose the type of causality reporting and with the assistance of the chart displace will provide the required treatment. He will be able to restore cardio pulmonary system and take necessary measure for referral to the tertiary care.	Audio / Visual Aids Presentations	Hands on	He will implement A.B.C on unconscious patient. Handling of an unconscious patient, treatment and handling of choking patient by hewer method.	Training Site	4 Hrs	

	(LU-4) Resuscitation (CPR)	7. Definition 8. Methods 9. CPR Techniques 10. Methodology of BLS / ALS 11. BLS through A.B.C 12. Vital Sign Monitoring 13. Cardiac crash trolley 14. Referral	Will be able to resuscitate in a sequence with monitoring of the vital signs in both digital method and manual. Will be able to utilized cardiac crash trolley, Will be able to sustain the cardio palmary system for referral to concerned department.	Audio / Visual Aids Presentations	Hands on	The AHP will be capable to position the patient and perform CPR in steps along with use of cardiac crash trolley and helping hands.	Training Site	4 Hrs	
	(LU-5) Circulatory System and Respiratory System	8. Brief Introduction to Hearth and Repertory System 9. Types of Emergencies related to Hearth and respiratory system 10. Cardiac Shock / Hearth failure /	Will be able to Restore breathing / relieve pain and normalize the cardio pulmonary system with referral to specialist concerned.	Audio / Visual Aids Presentations	Hands on	He will be able to asses' patient head to toe examination and will follow the subject of	Training Site	4 Hrs	

		<p>infarction etc</p> <ol style="list-style-type: none"> 11. Status asthmatics 12. Choking / Drowning / inhalation of Fumes etc 13. Head-to-toe Assessments steps in the format of S.A.M.P.L.E 				S.A.M.P. L.E. Immediate CPR will be performed to restore A.B.C to comply with the need of oxygen to the patient.			
	(LU-6) Wounds and Bleeding / Use of bandages	<ol style="list-style-type: none"> 1. Brief Hematology related to Human Anatomy 2. Bleeding Disorders and types of wounds 3. Mild and Severe Bleeding 4. Crush injuries 5. Cuts and Grazes 6. Abdominal and Vaginal bleeding 7. Management of Various types of bleeding sites 	Control of bleeding site to minimize shock along with reassurance To patient and relatives, necessary arrangements in case of blood transfusion required call the concerned specialist for further management.	Audio / Visual Aids Presentations	Hands on	He will be skilled to use the type of bandages in accordance to the bleeding site, assessment of external and internal bleeding,	Training Site	3 Hrs	

		8. Different form of Bandages used at different sites and types of bleeding in accordance to severity of injury.				applicatio n of bleeding control sequence, use of pressure bandages.			
	(LU-7) Bone Joint and Muscle Injuries	8. Brief introduction to skeletal system 9. Various injuries to joints and bones 10. Dislocation of joints 11. Backache / sciatica 12. Types of springs 13. Methods of supporting the injured bone site 14. Splints / Bandages used for bone injuries 15. R.I.C.E and I.A.C.T methodology	Assessment of place and degree of injury, control of bleeding if any, minimize the shock by reassurance and analgesic will support the fractured sites by the use of splints and bandage for further treatment.	Audio / Visual Aids Presentations	Hands on	Assessme nt will be done and treatment will be based on R.I.C.E or I.A.C.T to the relative joint or born injury.	Training Site	3 Hrs	
	(LU-8) Nervous	1. Brief introduction to	Conscious level evaluation, clear	Audio / Visual	Hands on	He will be able to	Training Site	3 Hrs	

	System Emergencies	<ul style="list-style-type: none"> nervous system 2. Level of consciousness 3. Head injuries 4. Types of strokes 5. Seizures in adult and child 6. Systematic Diseases effecting CNS 7. Spinal injuries 8. Headache / migraine 9. Diseases of meningies 10. Management 	airway, prevention of colonic / tonic convulsions, checking of reflexes maintains air entry, assessment of neurological deficit. Handling of spinal injury with referral to specialist. IV infusion with monitoring of neurological sign and symptoms including level of consciousness / reflexes / ophthalmic reaction.	Aids Presentations		immediate stabilize the patient with immobilization and clear airway along with treat shock with checking of the CNS system as a whole along with spinal injuries stabilization.			
	(LU-9) Environmental injuries	<ul style="list-style-type: none"> 1. Brief anatomy of skin and vital areas 2. Types of burns and scalds 3. Electrical and 	Assessment of the degree of the environment injury, maintenance of body fluent and temperature, relief of	Audio / Visual Aids Presentations	Hands on	Assessment of type and depth of bourn, immediate	Training Site	3 Hrs	

		<ul style="list-style-type: none"> 4. Chemical Burns 5. Rule of 9 (Nine) to Determine the area of burn 6. Fluid and Electrolyte Balance 7. CS Spray injuries 8. Frostbite / Hypothermia 9. Heat exhaustion / Heat Cramps / Heat Stroke 10. Sun burns 11. Prickly heat / body rash 	pain, measures to relief the pain on the burn site by medication,			treatment of the shock by medication, use of anti doubt in poisoning subject to availability, thermal injury patient to be removed from the site and referred for tertiary care.			
	(LU-10) Foreign Body Injuries	<ul style="list-style-type: none"> 1. Sensory Organs 2. Types of splinters 3. Site of injury 4. Inhaled foreign object 5. Swallowed foreign object 	Will be able to assess the status of foreign body injuries and to take measures to prevent further damage, possible removal of the foreign body with specialized	Audio / Visual Aids Presentations	Hands on	Care of the bleeding with use of antiseptic measures, removal of the	Training Site	3 Hrs	

			instrumentation, control bleeding by maintaining I.V fluids			foreign body if accessibl e ,avoid interferen ce to major damage to avoid bleeding			
	(LU-11) Poisonin g bites stings	<ol style="list-style-type: none"> 1. Types of various poises affecting the body system 2. Swelled poisons 3. Chemical / inhaled poisons 4. Insect bites / stings 5. Ticks / snake / animal bite 6. Rabies / Dog Bites 7. Use of various anti dotes 8. Drug reactions / poisoning 9. Chart to be maintained for treating effects of poisoning 	Assessment and Identification of piousness material, comforts and reassurance, recording of the vital signs, treatment of poison accordingly, drug poisoning / drug allergy to be highlighted and anti dote to be given accordingly, assurance of availability of drugs used to be present in emergency.	Audio / Visual Aids Presentations	Hands on	Reassura nce to the patient, first aid care according to the type of poison inhaled, anti-dote to be given subject to availabili ty, stabilize the patient and then refer.	Training Site	3 Hrs	

	(LU-12) Miscellaneous Emergency First Aid	First Aid in miscellaneous emergencies for management of fever/ headache / abdominal pain/ vomiting / diarrhea/ allergy / vertigo etc	With brief introduction to miscellaneous emergency he will be able to provide first aid to relief the symptoms	Audio / Visual Aids Presenta tions	Hands on	He will be able to handle minor ailments reporting in the medical health centre and will be knowledg eable to refer to the concerne d specialist as required.	Training Site	3 Hrs	
--	---	--	--	--	----------	---	------------------	-------	--

Assessment – First Aid

Learning Units	Theory Days / Hrs	Workplace Days / Hrs	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Topics LU-1 to LU-12			1. MCQS based on objectives e) True / False f) Fill in the blanks g) Choose the correct answer h) Modify the sentence 2. Identification of First Aid Equipments i.e Splints / Airways / Bandages / Fluids / Monitor 3. Short Assignments on Management of Various First Aid Procedures in reporting emergencies 4. Maintenance of Log book 5. Monitoring of cardio pulmonary vital signs 6. Steps of BLS / ALS 7. Steps on road traffic accident at site	Audio Visual Presentation	

HGC-012

Anatomy & Physiology

3(1-2)

Competencies

1. Understanding the structure of the human body and its regional and systemic organization.
2. Understanding the human body function at the cellular, tissue and system level.

Learning Objectives

- a. To understand the descriptive anatomical and physiological terms
- b. To describe anatomical regions, sections & planes.
- c. To introduce various systems of human body and their functions, including circulatory system, nervous system, digestive system, respiratory system, excretory system, gynecology and obstetrics and endocrinology.
- d. To introduce various sub-divisions of anatomy.
- e. To introduce osteology, orthology (joints), neurology, mycology (muscles) and visceral anatomy.

Distribution of Credit Hours HGC-012 (ANATOMY & PHYSIOLOGY)

Credit Hours: 3(1+2) [Theory 1 credit hour = 18 hours and Practical 1 credit hour =36 Hours]

Theory: 18 hrs

Anatomy = 9 hrs

Physiology = 9 hrs

Practical: 72 hrs

Anatomy = 01 hr for 4 days/wk

Physiology = 01 hr for 4 days/wk

Summary

Modules	Learning Units(LU)	Topics	Learners should be able to achieve these Outcomes/Objectives	Duration hours per week	Workplace Days/hours	Recommended Methodology
Module I <u>Anatomy</u>	LU 1: Anatomy: Introduction to Anatomy	1. Definition and the sub-divisions of Anatomy 2. Anatomical and fundamental positions 3. The descriptive anatomical regions, sections, planes and basic terminologies	1. Understand the definition of the anatomy of human body. 2. Understand the different branches of Anatomy 3. Understand the anatomical and fundamental positions 4. Understand the regions, sections, planes, and basic terminologies.	2 Hours	Lab 4hrs/day	Multimedia Lectures
	LU 2: Anatomy: Osteology	1. Introduction to Skeleton and description of bone and cartilage. 2. Skeletal bones identification and structural details (upper and lower extremities)	1. Understand the different parts of skeleton, Cartilages, and bones 2. Understand, identify, give structural details, and demonstration of different bones of the human body (upper and lower extremities)	2 Hours	Lab 4hrs/day	Multimedia Lectures

	LU 3: Anatomy: Osteology and Arthrology	1. Skeletal bones identification and structural details of Skull, thorax, vertebral column, 2. Definition and classification of joints	1. Understand, identify, give structural details, and demonstration of skull, thorax and vertebral column 2. Understand the different types of joints of human body and structural details	2 Hour	Lab 4hrs/day	Multimedia Lectures
	LU 4: Anatomy: Arthrology	1. Description of joints of upper limb with their anatomical structures 2. Description of joints of lower limb with their anatomical structures 3. Description of joints of spine with their anatomical structures	1. Understand and identify joints of upper limbs and learn their functions and movements. 2. Understand and identify joints of lower limb and learn their functions and movements. 3. Understand and identify joints of spine and learn their functions and movements.	3 Hours	Lab 6hrs/day	Multimedia Lectures

Modules	Learning Units(LU)	Topics	Learners should be able to achieve these Outcomes/Objectives	Duration hours per week	Workplace Days/hours	Recommended Methodology
Module II Physiology)	LU 1: Physiology: 1. Introduction physiology (human body, cell, skin)	1. Introduction to physiology. Definition, structure and function of cell 2. Structure and function of Skin and temperature regulation of skin	1. Define physiology and understand the functioning of human body 2. Understand the functioning of the cell and types of cell 3. Understand the different layers of skin, their functioning, and its temperature regulation	2 Hours	Lab 4hrs/day	Multimedia Lectures
	LU 2: Physiology: Nervous System	1. Introduction to nervous system, neural cells and its divisions 2. Brief description of CNS, with structure and function of brain and Spinal Cord	1. Understand the different parts of nervous system, its cells and differentiate between neural cells and other human body cells 2. Understand and differentiate between CNS and PNS 3. Understand, identify, give structural details, and demonstration of CNS with brief functioning details of CNS	2 Hours	Lab 4hrs/day	Multimedia Lectures

	LU 3: Physiology: Nervous System	3. Brief description of PNS, with Cranial Nerves (names and functions), and Spinal Nerves [major nerves (names and functions)].	1. Understand, identify, give structural details, and demonstration of PNS with brief functioning details of PNS 2. Understand, identify, give structural details, and demonstration of cranial and spinal nerves 3. Understand and differentiate between CNS and PNS	2 Hours	Lab 4hrs/day	Multimedia Lectures
	LU 4: Physiology: Circulatory System	1. Introduction to Circulatory System 2. Structure and function of circulatory system 3. Heart rate and Blood pressure Regulation and Assessment of heart sounds 4. Composition and function of blood	1. Understand the functioning and structural details of the circulatory system including heart, arteries, veins, and capillaries 2. Understand the composition of blood and identify the different components blood, clotting factors, and their values 3. Differentiate and describe the heart rate, blood pressure, and heart sounds and describe their importance	3 Hours	Lab 6hrs/day	Multimedia Lectures

Lesson Plan

LU 1	Topic	Duration depends on previous knowledge	Learning outcomes After completing this topic, the learner should be able to:	Materials required NOTE: Participants should have their own workbooks and pens	Learning place	Skills
Anatomy: Introduction to Anatomy	1. Anatomical and fundamental positions 2. The descriptive anatomical regions, sections, planes and basic terminologies	2 lessons (2 hours)	1. Understand the anatomical and fundamental positions 2. Understand the regions, sections, planes, and basic terminologies.	1. Worksheets (depending on the previous knowledge of the students) 2. PowerPoint Presentations for illustrating different sections and planes 3. Anatomical Atlas for Demonstrations	Classroom/ anatomy lab	Able to assist movements in different planes

LU 2	Topic	Duration depends on previous knowledge	Learning outcomes After completing this topic, the learner should be able to:	Materials required NOTE: Participants should have their own workbooks and pens	Learning place	
Anatomy: Osteology	1. Introduction to Skeleton and description of bone and cartilage. 2. Skeletal bones identification (upper and lower extremities)	3 lessons (3 hours)	1. Demonstrate the different parts of skeleton, Cartilages, and bones 2. Identify, give structural details, and demonstration of different bones of the limbs of human body.	1. Worksheets (depending on the previous knowledge of the students) 2. Anatomical Atlas for Demonstrations 3. Whole Human Skeleton and Separate Bones (single for demonstrations	Anatomical Lab	Able to understand and explain the anatomical names of human skeleton (upper and lower extremities)

LU 3	Topic	Duration depends on previous knowledge	Learning outcomes After completing this topic, the learner should be able to:	Materials required NOTE: Participants should have their own workbooks and pens	Learning place	
Anatomy: Osteology and Arthrology	1. Identification and structural details of head, neck and vertebral column. 2. Joints and its types	3 lessons (3 hours)	1. Identify, give structural details, and demonstration of different bones of the head and spine and their structural details. 2. Identify the major structures of joint and its components.	1. Worksheets (depending on the previous knowledge of the students) 2. Anatomical Atlas for Demonstrations 3. Whole Human Skeleton and Separate Bones and separate joints for Demonstrations.	Anatomical Lab	Able to understand and explain the anatomical names of human skeleton (head, neck, and vertebral column)

LU 4	Topic	Duration depends on previous knowledge	Learning outcomes After completing this topic, the learner should be able to:	Materials required NOTE: Participants should have their own workbooks and pens	Learning place	
Anatomy: Arthrology	1. Description of joints of upper limb with their anatomical structures 2. Description of joints of lower limb with their anatomical structures 3. Description of joints of spine with their anatomical structures	5 lessons (5 hours)	1. Demonstrate the different joints of upper limb and their movements 2. Demonstrate the different joints of lower limb and their movements 3. Demonstrate the different joints of spine and its movements.	1. Worksheets (depending on the previous knowledge of the students) 2. Anatomical Atlas for Demonstrations 3. Whole Human Skeleton and Separate Bones and separate joints for demonstration. 3. Cadavers	1. Classroom 2. Anatomical Lab	Able to understand and explain the anatomical names of joints of human skeleton.

LU 1 and 2	Topic	Duration depends on previous knowledge	Learning outcomes After completing this topic, the learner should be able to:	Materials required NOTE: Participants should have their own workbooks and pens	Learning place	
Physiology: Nervous System	1. Demonstration of structure of Brain and spinal cord 2. Demonstration of Cranial and Spinal Nerves (major nerves).	3 lessons (3 hours)	1. Demonstrate and identify the different parts of brain and spinal cord 2. Identify different spinal nerves	1. Worksheets (depending on the previous knowledge of the students) 2. Anatomical Atlas for Demonstrations 3. Brain 4. Spinal Cord 5. Cadavers	1. Classroom 2. Anatomical Lab	Able to explain the parts and functions of brain and spinal cord with relation to nerves.

LU 3 and 4	Topic	Duration depends on previous knowledge	Learning outcomes After completing this topic, the learner should be able to:	Materials required NOTE: Participants should have their own workbooks and pens	Learning place	
Physiology: Circulatory System	1. Structure circulatory system 2. Heart rate and Blood pressure monitoring and heart sounds	2 lessons (2 hours)	1. Demonstrate and identify the different parts of Heart 2. Demonstration of correct methods of measuring heart rate, blood pressure.	1. Worksheets (depending on the previous knowledge of the students) 2. Anatomical Atlas for Demonstrations 3. Cadavers 4. B.P. apparatus 5. Stethoscope	1. Anatomical Lab 2. Classroom.	Able to identify the structure of heart and explain and monitor the heart rate and blood pressure

Assessment

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended methodology	Scheduled dates
Human Body And Disease (Anatomy / Physiology)	Module - I	Class	Examples	<ul style="list-style-type: none"> • Multiple Choice Questions • Best Choice Questions • Viva 	After every module
<u>Anatomy LU1 – LU4</u>	Module - I	Class	<p><u>MCQ'S;</u></p> <p>Q.1. Branches of Anatomy are:</p> <ol style="list-style-type: none"> a. Gross anatomy b. Clinical anatomy c. Embryology d. Surface anatomy <p>Q.2. Ankle joint :</p> <ol style="list-style-type: none"> a. Is a condylar type of synovial joint b. Deltoid ligament has superficial and deep parts c. Posterior tibiotalar is a deep part of deltoid ligament d. Supplied by deep peroneal and tibial nerves <p>Q.3. Joint in which each joint surface is both</p>	<ul style="list-style-type: none"> • Multiple Choice Questions • Best Choice Questions • Viva 	After every module

			<p>convex in one plane & concave in other is:</p> <ol style="list-style-type: none"> Saddle joint Type of synovial joint Plane joint Ball & socket joint <p>Q.4. Bones of foot:</p> <ol style="list-style-type: none"> There are 7 tarsal bones Navicular bone is boat shaped Calcaneus form heel of bone There are 15 phalanges <p><u>BCQ'S</u></p> <p>Q.1. Anatomy is the study of:</p> <ol style="list-style-type: none"> Is a branch of biology and medicine and the study of internal functions of the human body Is a branch of biology and medicine that is the consideration of the structure of living things Is the study of bones and muscles of human body only Is the study of bones and joints of the human body <p>Q.2. Frontal axis is an imaginary line around which rotation occur in _____ plane:</p>	
--	--	--	---	--

			<ul style="list-style-type: none"> a. Sagittal plane b. Coronal plane c. Frontal plane d. Transverse plane <p>Q.3. Which one is example of synovial hinge type of joint</p> <ul style="list-style-type: none"> a. Symphysis pubis b. Sternoclavicular c. Elbow d. Radioulnar <p>Q.4. Anatomical snuff box.</p> <ul style="list-style-type: none"> a. Is bonded anteriorly by tendon of extensor pollicis longus. b. Is bonded posteriorly by tendon of extensor pollicis brevis c. Contain basilic vein in roof d. Contain cephalic vein in roof. 		
--	--	--	---	--	--

. Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended methodology	Scheduled dates
Human Body And Disease (Anatomy / Physiology)	Module - I	Class	Examples	<ul style="list-style-type: none"> • Multiple Choice Questions • Best Choice Questions • Viva 	After every module
<u>Physiology</u> <u>LU1 –LU4</u>	Module - I	Class	<p><u>MCQ'S;</u></p> <p>Q.1. Human Physiology</p> <ol style="list-style-type: none"> a. Is concerned with the specific characteristics and mechanisms of the human body that make it a living body b. Is the sub division of physiology c. Is to explain the physical and chemical factors that are responsible for the origin, development, and progression of human life d. Is confined to explain the mechanism is diseased conditions <p>Q.2. The cell</p> <ol style="list-style-type: none"> a. Membrane thickness is 7.5 to 10 nanometers b. Membrane is composed almost entirely of proteins and lipids c. Membrane contain cholesterol 	<ul style="list-style-type: none"> • Multiple Choice Questions • Best Choice Questions • Viva 	After every module

			<p>molecules only</p> <p>d. Membrane has lipid bilayer</p> <p>Q.3. Peripheral nervous system is basically classified into.</p> <p>a. Autonomic and sympathetic nervous system</p> <p>b. Somatic and autonomic nervous system.</p> <p>c. Sympathetic and parasympathetic nervous system.</p> <p>d. A and C both are true.</p> <p>Q.4. Following conditions are results in heat production:</p> <p>a. Heat production increases in response to decrease body temperature.</p> <p>b. Vasodilation of skin blood vessels.</p> <p>c. Thyroxine secretion.</p> <p>d. Vasoconstriction of skin blood vessels.</p> <p><u>BCQ'S:</u></p> <p>Q.1. Myelin sheet:</p> <p>a. Is a carbohydrate layer.</p> <p>b. Is only a lipid layer.</p> <p>c. Is only a protein layer.</p>		
--	--	--	---	--	--

			<p>d. Acts as an insulator.</p> <p>Q.2. Two major parts of cell are</p> <ul style="list-style-type: none">a. Nucleus and cellb. Cell and cytoplasmc. Nucleus and cytoplasmd. Nucleus and cell membrane. <p>Q.3. All are the functions of blood except.</p> <ul style="list-style-type: none">a. Transportationb. Regulationc. protectiond. secretion <p>4. The process for the clearance of blood from the waste product is called:</p> <ul style="list-style-type: none">a. Filtration.b. Dialysis.c. Reabsorption.d. Secretion.		
--	--	--	--	--	--

HGC-013

Medical Terminology

3(1-2)

Name of course: Medical terminology

Course Description: This course will provide students with a basic medical terminology vocabulary for use in the health care setting.

Course Objectives:

- Describe how medical terms are created.
- Use basic medical suffixes and prefixes accurately.
- Defines directional terms and anatomic planes of the body.
- Identify selected body systems structures and their related word parts.
- Use system word parts, prefixes, and suffixes to build and define words.
- Define medical terms related to selected diseases.
- Define selected diagnostic and surgical procedural terms for each body system.
- Define other selected medical terms and related to color and medical specialties.
- Recognize selected abbreviations related to each body system.
- Spell, pronounce, and use specific medical terms.

Competencies gained after completion of course:

This knowledge will enable them to become successful communicators (especially in the health care setting). Thru the course and semester projects students will learn ways to become active community members and life-long learners.

Summary

Module	Learning Units (LU)	Topics	Learners should be able to achieve these Outcomes	Theory Days/hours	Workplace Days/hours
Module 1 (First Semester)	LU 1 Building Medical Vocabulary	<ol style="list-style-type: none"> 1. Word building. 2. Word roots, combined Forms, Prefixes & Suffixes. 3. Combining word parts to write medical Terms. 4. Pronunciation of medical terms. 	<ul style="list-style-type: none"> • Identify the role and recognize example of word, roots, prefixes, suffixes & combining forms. • Demonstrate correct usage of the combining vowel. • Recognize the importance of spelling and correctly pronounce medical terms using phonetic system. 	2 Hr	4 Hr
	LU 2 The blood and other body fluids	<ol style="list-style-type: none"> 1. Body fluids and composition of blood 2. Abnormalities of the formed elements of blood. 3. Morphologic abnormalities of Erythrocytes. 4. Blood coagulation and Immune System. 5. Hemoglobinopathies and additional word parts. 	<ul style="list-style-type: none"> • Demonstrate the important role of body fluids. • Recognize the meaning of word parts and use them to write hematologic terms. • Describe several important processes and characteristics of blood. • Identify the function and principal conditions that effect erythrocytes, and blood platelets. • Accurately spell medical terms • Correctly pronounce medical terms. • Write the meanings of the abbreviations. 	2 Hr	4 Hr

	<p>LU 3 The Circulatory and Lymphatic System.</p>	<ol style="list-style-type: none"> 1. Cardio vascular pump and blood circulation. 2. Cardio vascular diagnostic procedure. 3. Lymphatic system. 	<ul style="list-style-type: none"> • Recognize the names of the structure of cardio vascular system and define terms. • Demonstrate understanding of the significance of the lymphatic system and analyze associated terminology. • Write the meaning of word parts associate with the circulatory system and use the word part to build and analyze terms. • Differentiate terms as being relate to diagnosis anatomy, surgery, therapy, or radiology. • Accurately spell the terms. • Correctly pronounce the terms. • Know the meaning of the abbreviations. 	<p>2 Hr</p>	<p>4 Hr</p>
	<p>LU 4 The Respiratory System</p>	<ol style="list-style-type: none"> 1. Respiration and its functions. 2. Composition of the Respiratory System 3. Respiratory diseases or disorders. 	<ul style="list-style-type: none"> • Recognize names of the structure of respiratory system and define terms associated with these structures. • Write the meaning of word parts associated with the respiratory system and use the word parts to build and analyze terms. • Differentiate terms as being related to the diagnosis anatomy, surgery, therapy, or radiology. • Correctly pronounce the term. • Know the meaning of the abbreviations. 	<p>1 Hr</p>	<p>2 Hr</p>

	LU 5 The Digestive System.	<ol style="list-style-type: none"> 1. Composition of the Digestive System. 2. Accessory organs of digestion. 	<ul style="list-style-type: none"> • Describe the structure and functions of the digestive system. • Recognize and define the meaning of the terms and use the word parts to write terms related to the digestive system. • Recognize the role of pancreas in diabetes mellitus and hypoglycemia. • Differentiate terms being related to diagnosis anatomy surgery, therapy, or radiology. • Accurately spell and pronounce the terms. 	1 Hr	2 Hr
	LU 6 The Urinary System	<ol style="list-style-type: none"> 1. The urinary tract and renal disorders. 2. Composition of Urinary System 3. Genito urinary infections and urinalysis. 	<ul style="list-style-type: none"> • Describe the structure and function of urinary tract. • Use the word parts to build and analyze terms related to urinary system. • Recognize the diagnostic importance of urinalysis. • Categorize the terms as an anatomical, surgical, diagnostic or radiological. • Accurately spell and pronounce the terms. • Know the meanings of the abbreviations. 	2 Hr	4 Hr
	LU 7 The Muscular and skeletal system	<ol style="list-style-type: none"> 1. Composition of bone. 2. The skeleton. 3. Joints. 4. Muscles and supporting structures. 	<ul style="list-style-type: none"> • Recognize the major bones of the body. • Describe the functions of bones, Muscle and supporting structures. • Use the word parts to build and analyze terms related to the skeletal and muscular system. 	3 Hr	6 Hr

			<ul style="list-style-type: none"> • Accurately spell and pronounce the terms. • Recognize the location of different types of vertebrae. 		
	LU 8 The Nervous System and Psychological disorder	<ol style="list-style-type: none"> 1. Composition of the Nervous System 2. The Central Nervous System. 3. The Peripheral Nervous System and the Sense Organs. 	<ul style="list-style-type: none"> • Describe the structure of the Nervous System and understand their relationship. • Use the word parts to build and analyze terms concerning the Nervous system. • Demonstrate the understanding of several disorders of the sense organs. • Accurately spell the terms. • Correctly pronounce the terms. • Know the meaning of the abbreviation. 	1 Hr	2 Hr
	LU 9 The Integumentary System	<ol style="list-style-type: none"> 1. Structure and function of the skin. 2. Associated skin structures. 3. Diagnostic, Pharmaceutical and therapeutic terms. 	<ul style="list-style-type: none"> • Demonstrate understanding of the structures and functions of the skin. • Write the meaning of word parts pertaining to the Integumentary system and use them to build and analyze Medical Terms. • Recognize the functions of structures associated with the skin. • Accurately spell the terms. • Correctly pronounce the terms. • Know the meaning of the abbreviations. 	1 Hr	2 Hr
	LU 10 The Endocrine System	<ol style="list-style-type: none"> 1. Composition of Endocrine System. 2. The Pituitary Gland. 3. Harmones released by 	<ul style="list-style-type: none"> • Understand the relationship between pituitary gland and other glands. • Identify the relationship of glands and 	1 Hr	2 Hr

		<p>the Neurohypophysis.</p> <p>4. The functions of the Adenohypophysis other endocrine tissues and Homeostasis.</p>	<p>target organs.</p> <ul style="list-style-type: none"> • Identify several disorders caused by hormonal • Write the meaning of word parts pertaining to the endocrine system and use them to build and analyze medical terms. • Accurately spell and pronounce the terms. • Know the meaning of Abbreviations. 		
	<p>LU 11 The Reproductive System</p>	<ol style="list-style-type: none"> 1. The female Genitalia. 2. The composition of Female Reproductive System. 3. Menstrual cycle and pregnancy. 4. Male Genitalia 5. The composition of male Reproductive System. 6. Sexually Transmitted diseases. 	<ul style="list-style-type: none"> • Describe the structure and function of female and male genitalia. • Use the word parts to build and analyze terms pertaining to the reproductive system. • Understand relationship between menstrual gents of cycle and pregnancy. • Describe several types of sexually transmitted diseases. • Know the causative agents of sexually transmitted disease and recognize the difficulty of treating those caused by viruses. • Accurately spell and pronounce the terms. • Know the meaning of abbreviation. 	2 Hr	4 Hr

Lesson Plan

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical (LMS)
LU 1 Building Medical Vocabulary	1. Word building.	1 lesson (60min) 20 min	<ul style="list-style-type: none"> Identify the role and recognize example of word, roots, prefixes, suffixes & combining forms. Demonstrate correct usage of the combining vowel. 	<ol style="list-style-type: none"> White board. A-V Display Online presentation. 	Online Exercises Online Presentation
	2. Word roots, combined Forms, Prefixes & Suffixes.	40 min			
	1. Combining word parts to write medical Terms.	1 lesson (60min) 40 min	<ul style="list-style-type: none"> Demonstrate correct usage of the combining vowel. Recognize the importance of spelling and correctly pronounce medical terms using phonetic system. 	<ol style="list-style-type: none"> White board. A-V Display Online presentation. 	Online Exercises Online Presentation
	2. Pronunciation of medical terms.	20 min			

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical
LU 2 The blood and other body fluids	<ol style="list-style-type: none"> 1. Body fluids and composition of blood 2. Abnormalities of the formed elements of blood. 	1 lesson (60min) 30 min 30 min	<ul style="list-style-type: none"> • Demonstrate the important role of body fluids. • Recognize the meaning of word parts and use them to write hematologic terms. • Describe several important processes and characteristics of blood. • Correctly pronounce medical terms. • Know the meaning of the abbreviations. 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	Online Exercises Online Presentation
	<ol style="list-style-type: none"> 1. Morphologic abnormalities of Erythrocytes. 2. Blood coagulation and Immune System. 3. Hemoglobinopathies and additional word parts. 	1 lesson (60min) 20 min 20 min 20 min	<ul style="list-style-type: none"> • Recognize the meaning of word parts pertaining to the various abnormalities of blood cell and use them to build and analyze medical terms. • Accurately spell medical terms • Correctly pronounce medical terms. • Know the meaning of the abbreviations. 		Online Exercises Online Presentation

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical
LU 3 The Circulatory and Lymphatic System.	1. Cardio vascular pump and blood circulation.	1 lesson (60min) 60 min	<ul style="list-style-type: none"> Recognize the names of the structure of cardio vascular system and define terms. Write the meaning of word parts associate with the circulatory system and use the word part to build and analyze terms. Differentiate terms as being relate to diagnosis anatomy, surgery, therapy, or radiology. Accurately spell the terms. Correctly pronounce the terms. Know the meaning of the abbreviations. 	<ol style="list-style-type: none"> White board. A-V Display Online presentation. 	Online Exercises Online Presentation
	<ol style="list-style-type: none"> Cardio vascular diagnostic procedure. Lymphatic system. 	1 lesson (60min) 40 min 20 min	<ul style="list-style-type: none"> Demonstrate understanding of the significance of the lymphatic system and analyze associated terminology. 	<ol style="list-style-type: none"> White board. A-V Display Online presentation. 	Online Exercises Online Presentation

			<ul style="list-style-type: none"> • Differentiate terms as being relate to diagnosis anatomy, surgery, therapy, or radiology. • Accurately spell the terms. • Correctly pronounce the terms. • Know the meaning of the abbreviations. 		
--	--	--	--	--	--

LU 4 The Respiratory System	<ol style="list-style-type: none"> 1. Respiration and its functions. 2. Composition of the Respiratory System 3. Respiratory diseases or disorders 	1 lesson (60min) 20 min 20 min 20 min	<ul style="list-style-type: none"> • Recognize names of the structure of respiratory system and define terms associated with these structures. • Write the meaning of word parts associated with the respiratory system and use the word parts to build and analyze terms. • Differentiate terms as being related to the diagnosis anatomy, surgery, therapy, or radiology. • Correctly pronounce the term. • Know the meaning of the abbreviations. 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	Online Exercises Online Presentation
--------------------------------	---	--	---	--	---

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical
LU 5 The Digestive System.	<ol style="list-style-type: none"> 1. Composition of the Digestive System. 2. Accessory organs of digestion. 	<p>1 lesson (60min)</p> <p>30 min</p> <p>30 min</p>	<ul style="list-style-type: none"> • Describe the structure and functions of the digestive system. • Recognize and define the meaning of the terms and use the word parts to write terms related to the digestive system. • Recognize the role of pancreas in diabetes mellitus and hypoglycemia. • Differentiate terms being related to diagnosis anatomy surgery, therapy, or radiology. • Accurately spell and pronounce the terms. 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	<p>Online Exercises</p> <p>Online Presentation</p>

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical
LU 6 The Urinary System	<ol style="list-style-type: none"> Composition of Urinary System The urinary tract and renal disorders. 	1 lesson (60min) 30 min 30 min	<ul style="list-style-type: none"> Describe the structure and function of urinary tract. Use the word parts to build and analyze terms related to urinary system. Categorize the terms as an anatomical, surgical, diagnostic or radiological. Accurately spell and pronounce the terms. Know the meanings of the abbreviations. 	<ol style="list-style-type: none"> White board. A-V Display Online presentation. 	Online Exercises Online Presentation
	<ol style="list-style-type: none"> Genito urinary infections and urinalysis. 	1 lesson (60min) 60 min	<ul style="list-style-type: none"> Recognize the diagnostic importance of urinalysis. Categorize the terms as an anatomical, surgical, diagnostic or radiological. Accurately spell and pronounce the terms. Know the meanings of the abbreviations. 	<ol style="list-style-type: none"> White board. A-V Display Online presentation. 	Online Exercises Online Presentation

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical
LU 7 The Muscular and skeletal system	<ol style="list-style-type: none"> Composition of bone. Joints. 	1 lesson (60min) 30 min 30 min	<ul style="list-style-type: none"> Recognize the major bones and joints of the body. Describe the functions of bones and joints. Use the word parts to build and analyze terms related to the skeletal and muscular system. Accurately spell and pronounce the terms. 	<ol style="list-style-type: none"> White board. A-V Display Online presentation. 	Online Exercises Online Presentation
	<ol style="list-style-type: none"> The skeleton. 	1 lesson (60min) 60 min	<ul style="list-style-type: none"> Use the word parts to build and analyze terms related to the skeleton system. Recognize the location of different types of vertebrae. Use the word parts to build and analyze terms related to the skeletal and muscular system. Accurately spell and pronounce the terms. Recognize the location of different types of vertebrae. 	<ol style="list-style-type: none"> White board. A-V Display Online presentation. 	Online Exercises Online Presentation

	1. Muscles and supporting structures.	1 lesson (60min) 60 min	<ul style="list-style-type: none"> • Use the word parts to build and analyze terms related to the muscular system. • Use the word parts to build and analyze terms related to the skeletal and muscular system. • Accurately spell and pronounce the terms. • Recognize the location of different types of vertebrae 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	Online Exercises Online Presentation
--	---------------------------------------	--	--	--	---

LU 8 The Nervous System and Psychological disorder	<ol style="list-style-type: none"> 1. Composition of the Nervous System 2. The Central Nervous System. 3. The Peripheral Nervous System and the Sense Organs. 	1 lesson (60min) 20 min 20 min 20 min	<ul style="list-style-type: none"> • Describe the structure of the Nervous System and understand their relationship. • Use the word parts to build and analyze terms concerning the Nervous system. • Demonstrate the understanding of several disorders of the sense organs. • Accurately spell the terms. • Correctly pronounce the terms. • Know the meaning of the abbreviation. 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	Online Exercises Online Presentation
---	--	--	--	--	---

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical
LU 9 The Integumentary System	<ol style="list-style-type: none"> 1. Structure and function of the skin. 2. Associated skin structures. 3. Diagnostic, Pharmaceutical and therapeutic terms. 	<p>1 lesson (60min)</p> <p>20 min</p> <p>20 min</p> <p>20 min</p>	<ul style="list-style-type: none"> • Demonstrate understanding of the structures and functions of the skin. • Write the meaning of word parts pertaining to the Integumentary system and use them to build and analyze Medical Terms. • Recognize the functions of structures associated with the skin. • Accurately spell the terms. • Correctly pronounce the terms. • Know the meaning of the abbreviations. 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	<p>Online Exercises</p> <p>Online Presentation</p>

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical
LU 10 The Endocrine System	<ol style="list-style-type: none"> 1. Composition of Endocrine System. 2. The Pituitary Gland. 3. Hormones released by the Neurohypophysis. 4. The functions of the Adenohypophysis other endocrine tissues and Homeostasis. 	1 lesson (60min) 15 min 15 min 15 min 15 min	<ul style="list-style-type: none"> • Understand the relationship between pituitary gland and other glands. • Identify the relationship of glands and target organs. • Identify several disorders caused by hormonal • Write the meaning of word parts pertaining to the endocrine system and use them to build and analyze medical terms. • Accurately spell and pronounce the terms. • Know the meaning of Abbreviations. 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	Online Exercises Online Presentation

LU	Topic	Duration depends on previous Knowledge	Learning outcomes after completing this topic , the learner should be able to	Materials required NOTE: Participants should have their own workbooks and pens	Learning Place / Practical
LU 11 The Reproductive System		1 lesson (60min)	<ul style="list-style-type: none"> • Describe the structure and function of female genitalia. • Use the word parts to build and analyze terms pertaining to the female reproductive system. • Understand relationship between menstrual gents of cycle and pregnancy. • Accurately spell and pronounce the terms. • Know the meaning of abbreviation. 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	Online Exercises Online Presentation
	1. The female Genitalia.	20 min			
	2. The composition of Female Reproductive System.	20 min			
	3. Menstrual cycle and pregnancy.	20 min			
		1 lesson (60min)	<ul style="list-style-type: none"> • Describe the structure and function of male genitalia. • Use the word parts to build and analyze terms pertaining to the male reproductive system. • Describe several types of sexually transmitted diseases. • Know the causative agents of sexually transmitted disease and recognize the difficulty of treating those caused by viruses. • Accurately spell and pronounce the terms. 	<ol style="list-style-type: none"> 1. White board. 2. A-V Display 3. Online presentation. 	Online Exercises Online Presentation
	1. Male Genitalia	20 min			
	2. The composition of male Reproductive System.	20 min			
	3. Sexually Transmitted diseases.	20 min			

Assessment

Learning Units	Theory (hrs-days)	Workplace (days)	Recommended formative assessment	Recommended methodology	Scheduled Dates
M1-LU 1: Building Medical Vocabulary			<ol style="list-style-type: none"> 1. A _____ is the main body of the word. <ol style="list-style-type: none"> a) Suffix b) Prefix c) Root 2. The combining form of cyst is _____ . <ol style="list-style-type: none"> a. cyst/a b. cyst/e c. cyst/o 	<ol style="list-style-type: none"> 1. MCQs 2. Terminology review Exercises. 3. Online assessment exercises. 	Week 1 & Week 2
M1-LU 2: The blood and other body fluids	3 hrs	IOL (3 days)	<ol style="list-style-type: none"> 1. Hemophilia is _____. <ol style="list-style-type: none"> a. Deficiency of red blood cells. b. A blood disorder. c. Deficiency of white blood cells. 2. A blood clot that forms in a blood vessel in the heart is called _____. <ol style="list-style-type: none"> a. Thrombus. b. Isotope. c. Macrophage. 3. The one who studies cells is called _____. <ol style="list-style-type: none"> a. Psychologist b. Hematologist. c. Cytologist. 	<ol style="list-style-type: none"> 1. Label the Given Diagram. 2. Reinforcement exercise. 3. MCQs 4. Online Assessment Exercise. 	Week 3 & Week 4

<p>M1-LU 3:</p> <p>The circulatory and lymphatic system.</p>	<p>4 Hrs</p>	<p>IOL</p>	<p>1. Give meaning of the following abbreviations ;</p> <p>i) C P R -----</p> <p>ii) E C G -----</p> <p>iii) M I -----</p> <p>iv) S A -----</p> <p>v) C T -----</p> <p>2. Match suffixes in the right column to their correct meaning:</p> <p>a. – atomy A. membrane</p> <p>b.—phobia B. swelling</p> <p>c.---edema C. artificial</p> <p>d.—meter D. abnormal</p> <p>e,-- ium E. instrument to Measure</p> <p>3. True/False statements:</p> <p>i) Defibrillator is an instrument to cause fibrillation. T/F</p> <p>ii) A narrowing of the aorta or its orifice is called aortic stenosis. T/F</p> <p>iii) Lymphadenoma is an enlarged lymph node. T/F</p> <p>iv) A primary disease of the heart muscle is termed as cardiomyopathy. T/f</p>	<p>1. Internet assignment</p> <p>2. Online assessment</p> <p>3. MCQs</p>	<p>Week 5 & Week 6</p>
--	--------------	------------	--	--	----------------------------

M1- LU 4: The Respiratory system	3 Hrs	IOL	<p>1) Match the following structures with their functions:</p> <p>1.pharynx A. Communicat ion with paranasal sinus</p> <p>2.alveoli B. contains vocal cords.</p> <p>3.nose C. where blood picks up oxygen.</p> <p>4.bronchus D. where tonsils are located.</p> <p>5.larynx E. one of the two branches of trachea.</p> <p>2) Give meanings of the following suffixes :</p> <p>a) algia -----</p> <p>b) capnia -----</p> <p>c) centesis -----</p> <p>d) ectasia -----</p> <p>e) iasis -----</p> <p>3) Give one answer for each of the following MCQs:</p> <p>a) Air or gas in the pleural cavity is -- -----.</p> <p>i) Pneumothorax</p>	<p>1. MCQs</p> <p>2. Label the given diagram.</p> <p>3. Internet presentation.</p>	Week 7
---	-------	-----	---	--	--------

			ii) Pleuropneumonia iii) pulmonary edema		
M1-LU5: Digestive System	3 Hrs	IOL	1. Complete the table by writing a word part or its meaning in each blank : 1. Suffix meaning 1. cele ----- 2. clysis ----- 3. megaly ----- 4. ----- digestion 5. ----- bad 2) Select one correct answer for each of the following MCQs: 1. Loss of appetite for food is called -----. i. Euphoria ii. Dyspepsia iii. Dysphagia 2. Stomatitis is the inflammation of -----. i. Stomach ii. Intestines iii. Mouth 3. Enteral means pertaining to ----- i. Digestive tract ii. Stomach iii. Intestines	2) Review exercise 3) Internet assignment	Week 8

			<p>4. Polydipsia is ----- ----- i. greater than normal lipids ii. excessive vomiting iii. excessive thirst</p>		
M1-LU6: Urinary system			<p>1) Write words for: (i) Difficult urination ----- (ii) without urine ----- (iii)inflammation of bladder ----- (iv).inflammation of urethra ----- (v) ketones in urine -----</p> <p>2) complete the following words that begin with intra- ; a) within the cell is intra - ----- b) within the vein is intra - ----- c) within the chest is intra- ----- d) within a lung is intra- -----.</p>	<p>1. MCQs 2. Terminology review exercise 3. Label the given diagram. 4. Online assessment.</p>	<p>Week 9 & Week 10</p>

<p>M1-LU7:</p> <p>The muscular and skeletal system.</p>			<p>1) Match the column ;</p> <p>1.ab----- a. Change or next</p> <p>2.infra---- b. joined; together</p> <p>3.supra---- c. backward</p> <p>4.retro---- d. situated below</p> <p>5.syn----- e. away</p> <p>6.meta---- f. above</p> <p>2) Give words for ;</p> <p>a) joint inflammation -----</p> <p>b) any disease of muscle -----</p> <p>c) Formation of bone -----</p> <p>d) muscle hernia -----</p> <p>3) choose one answer for each of the MCQs;</p> <p>A. abnormal hardness or heaviness of bones is -----.</p> <p>i) Osteopenia</p> <p>ii) osteosclerosis</p> <p>iii) osteoid</p> <p>B. lateral curvature of the vertebral column is called -----</p> <p>i) pagot's disease</p> <p>ii) scoliosis</p> <p>iii) osteoid</p>	<p>1. MCQs</p> <p>2. Working practice review exercises.</p> <p>3. Label the given diagram.</p> <p>4. Online assessment exercises.</p> <p>5. Terminology review exercises.</p>	<p>Week 11 & Week 12</p>
---	--	--	---	---	------------------------------

<p>M1-LU8:</p> <p>The Nervous System and Psychological disorders</p>			<p>1. Match prefixes with their meanings;</p> <table border="1" data-bbox="863 272 1268 415"> <tr> <td>1.di-</td> <td>1. Against</td> </tr> <tr> <td>2. Hemi-</td> <td>2. Two</td> </tr> <tr> <td>3. inter-</td> <td>3. Half</td> </tr> <tr> <td>4. Contra-</td> <td>4. Between</td> </tr> </table> <p>2) True/False statement ;</p> <p>a) the Gray matter that covers the cerebrum is called cerebral cortex. T/ F</p> <p>b) Paralysis of one side of body is called hemiplegia. T/F</p> <p>c) Pain of many nerve is called polyneuralgia . T/F</p>	1.di-	1. Against	2. Hemi-	2. Two	3. inter-	3. Half	4. Contra-	4. Between	<p>1. MCQs</p> <p>2. Online assessment exercises.</p> <p>3. Terminology review exercises.</p>	<p>Week 14</p>
1.di-	1. Against												
2. Hemi-	2. Two												
3. inter-	3. Half												
4. Contra-	4. Between												

<p>M1-LU9:</p> <p>The Integumentary System</p>			<p>A. True and False Statement:</p> <p>i) Hidr/o means sweat. T/F</p> <p>ii) Heat stroke & Sun stroke are examples of hypothermia. T/F</p> <p>iii) A partial or total absence of pigment in the skin, hair and eyes is called albinism. T/F</p> <p>B. Write the meaning of Following abbreviations:</p> <p>i) BX</p> <p>ii) SLE</p> <p>iii) UV</p> <p>iv) FANA</p> <p>C. Write the meaning of combining forms listed below:</p> <p>i) Albin/o-----</p> <p>ii) Lethy/o-----</p>	<p>1. MCQs</p> <p>2. Online assessment exercises.</p> <p>3. Terminology review exercises.</p>	<p>Week 15</p>
--	--	--	--	---	----------------

			iii) Seb/o----- iv) Xer/o-----		
--	--	--	-----------------------------------	--	--

<p>M1-LU10: The Endocrine System</p>			<p>A. Match glands with the harmonies they secrete.</p> <table border="1" data-bbox="821 418 1228 565"> <tr> <td>Thyroxin</td> <td>Pituitary</td> </tr> <tr> <td>Insulin</td> <td>Thyroid</td> </tr> <tr> <td>Growth harmonies</td> <td>pancreas</td> </tr> </table> <p>Choose one answer for each of the following MCQs.</p> <p>A. Which type of term is “mastectomy”?</p> <ul style="list-style-type: none"> i) Anatomical ii) Diagnostic iii) Radiological iv) Surgical <p>B. Enlargement of the adrenal gland is:</p> <ul style="list-style-type: none"> i) Adrenitis ii) Adenoma iii) Adrenomegaly iv) Adrenalectomy <p>C. Hormones that produce masculine sex characteristics are:</p> <ul style="list-style-type: none"> i) Androgens ii) Prolactins iii) Estrogens iv) Triiodothyronines 	Thyroxin	Pituitary	Insulin	Thyroid	Growth harmonies	pancreas	<ol style="list-style-type: none"> 1. Label the given Diagram. 2. Terminology review exercises. 3. Online assessment exercises. 	<p>Week 16</p>
Thyroxin	Pituitary										
Insulin	Thyroid										
Growth harmonies	pancreas										

<p>M1-LU11: The Reproductive System</p>			<p>A. Match prefixes with their meanings:</p> <p>Ante---- None Ecto----- Many Multi---- First Neo----- Before Nulli----- After Post----- Outside Primi----- new</p> <p>Choose one answer for each of the following MCQs.</p> <p>A. An infection involving more or less the entire female genital tract is: i) Oophoritis ii) Salpingitis iii) Pelvic inflammatory disease</p> <p>B. Another name for an extrauterine pregnancy is: i) Ectopic pregnancy ii) False pregnancy iii) Pseudocyesis</p> <p>Write the meaning of Following abbreviations:</p> <p>1. ARC----- 2. GU----- 3. IUD----- 4. LMP----- 5. PID-----</p>	<p>1. MCQs 2. Terminology review exercises. 3. Internet assignment. 4. Online assessment exercises.</p>	<p>Week 17 & Week 18</p>
--	--	--	--	--	--------------------------------------

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
Elementary Chemistry	LU- 1 Introduction to chemistry	<ul style="list-style-type: none"> What is chemistry Branches of chemistry Application of chemistry Define Mass, Volume , Density, Specific gravity 	Student should be able to learn about what is chemistry and how the science of chemistry is studied .	Lecture	Activity Rotation in chemistry lab	To observe the concept of chemistry useful in real life situation	Class room Lab	2 hrs. 3 hrs	After every topic
	LU-2 Atoms and Molecules	a. Basic Characteristic of atoms. b. Valency c. Atomic mass d. Molecular mass	a. Student should be able to understand the basic concept of atoms and molecules	Lecture	Activity : Practice to take out atomic and molecular mass of different elements	Learner should be able to know the valency and atomic and molecular mass of different elements	Class room	2 hrs. 4 hrs	After every topic

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
	LU- 3 Chemical Reaction and chemical equation	1. Define chemical action. 2. Types of chemical reaction Exothermic Endothermic reactions. 3. chemical Equation Parts of chemical Equation	Learner should be able to understand the chemical actions, their types And also know about chemical equation	Lecture Presentation	Activity: Observe examples of exo & endo thermic reaction in lab EXO .Combustion of methane gas * combination of water with quick lime (CaO) ENDOTHERMIC. *Addition of sodium carbonate to sodium chloride *Decomposition of Calcium carbonate * Writing chemical equation and practice balanced the equation.	Learner should be able to understand about chemical reactions and formulas	Class room Lab	2 hrs. 6 hrs.	After every topic

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
	Lu -4 ACIDS, BASES & SALTS	Define Acids General properties of acids Example of Acids Action of different indicators on acids Define Bases General properties of Bases Example of Bases Action of different indicators on Bases Define salts Kinds of salts Example of salts Neutralization Titration	. Student should be able to identify acid base, salts and their properties And also know How base titrated with acid and vice versa.	Lecture Presentation	Activity Practice different acid, base reactions Perform titration process	Learner should be able to understand different acid –base reaction And mechanism of titration.	Class room and Lab	4 hrs. 6 hrs	After every topic.

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	scheduled dates
	LU- 5 CHEMICAL BOND	1. Types of chemical bond 2. characteristic of covalent bond Ionic bond and Metallic bond Difference b/w covalent and ionic bond.	Student should be able to understand the types of bond and difference b/w the ionic and covalent bond.	Lecture Presentation	Activity Making structure of diff compound	Student should be able to make structure of different compounds	Class room Lab	2 hrs. 5 hrs.	After every topic
	LU- 6 SOLUTIONS	1. Define Solution What is solute What is solvent Examples Saturated Solution Unsaturated Solution	Learner should be able to understand solution , solute, solvent.	Lecture Presentation	Activity Dissolve solute in solvent	By dissolving solutes in different solvent observe the solubility	Class room Lab	3 hrs. 6 hrs.	After every topic

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	scheduled dates
	LU- 7 STATES OF MATTER	Define Matter States of matter Characteristic of solid , Liquid Gases Plasma	Learner should be able to learn about the different states of matter & how matter transform itself from one state to another.	Lecture Presentation	Activity: To observe different characteristic of matter by evaporation, condensation, boiling point & melting point .	By practical learner should be able to differentiate b/w different states of matter	Class room	3 hrs. 6 hrs.	After every topic

Assessment

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOG	SCHEDULES DATES
LU- 1 Introduction to chemistry	<ul style="list-style-type: none"> • What is chemistry • Branches of chemistry • Application of chemistry • Define Mass, Volume , Density, Specific gravity 	1. Chemistry is a branch of which deals with composition and properties of matter and chemical changes involved it (T/F) 2. The study of carbon containing substance is called <u>Organic chemistry.</u> 3. The chemistry of elements and their compound except carbon hydrogen compound called <u>Inorganic Chemistry</u> 4. Chemistry of living organism is called <u>Biochemistry.</u> 5. The study of changes occurring in the nuclei of the atoms accompanied by emission of radiation called <u>Nuclear chemistry</u> 6. Industrial chemistry deals in different chemical process involved in manufacture of		Class room	Fill in the blanks	After every topic

		<p><u>synthetic product</u></p> <p>7.The quantity of matter contained in a body called <u>Mass</u></p> <p>8.The space occupied by the body is <u>Volume</u></p> <p>9.<u>Mass per unit volume</u> is called density</p>				
--	--	--	--	--	--	--

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU-2 Atoms and Molecules	<ul style="list-style-type: none"> Basic Characteristic of atoms. Valency Atomic mass Molecular mass 	<ol style="list-style-type: none"> Atoms join together to form <u>compounds</u> and <u>molecules</u> Atoms are the basic building block of <u>matter</u>. Each electron has <u>negative</u> charge. Each proton has <u>positive</u> charge The nucleus of an atom contains <u>protons</u> and <u>neutrons</u> : The power of an element to combine with other elements is known as <u>Valency</u> The sum of the atomic masses of all the atoms present in a molecule is called <u>Molecular mass</u> Atomic mass of an element 		Class room	Class room	ATER EVERY TOPIC

		<p>expressed in gram is called <u>Gram atomic mass.</u></p> <p>Substances that can not be broken down into simpler substances by ordinary chemical reactions are called atoms. compounds. elements. molecules</p>				
--	--	--	--	--	--	--

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU- 3 Chemical Reaction and chemical equation	1. Define chemical action. 2. Types of chemical reaction . Exothermic Endothermic reactions. 3. chemical Equation Parts of chemical Equation	1.A process in which one or more chemical substance react to form one or more substance is called chemical reaction (T / F) 2.Reactions in which heat is not evolved called Exothermic reaction (T / F) 3.Reactions in which heat is absorbed is called Endothermic reaction (T / F)		Class room	True and false	AFTER EVERY TOPIC

		<p>4. There are two parts of chemical equation (T / F)</p> <p>5.The substance which reacts in chemical reaction are called products (T / F)</p> <p>6. An equation in which the number of atoms of each element is the same on both side called Balance equation (T / F) .</p> <p>7. energy needed for chemical reactions in the body is provided by the break down of :</p> <ul style="list-style-type: none">• RNA• DNA• ATP(✓)• ADP				
--	--	--	--	--	--	--

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
Lu -4 ACIDS, BASES & SALTS	Define Acids General properties of acids Example of Acids Action of different indicators on acids Define Bases General properties of Bases Example of Bases Action of different indicators on Bases Define salts Kinds of salts Example of salts Neutralization Titration	1.Acids are : <ul style="list-style-type: none"> • They have sour taste. • They turn blue litmus red • They give out Hydrogen gas when reacted with metals • All of above (✓) 2.Which of the following are more acidic solution: <ul style="list-style-type: none"> • pH 4 (✓) • pH 5 • pH 7 • pH 14 3.All the acids are not soluble in water (T/ F) 4. Acids have a pH level below 7 (T / F) 5. Which of the following statement is true concerning acids and bases: <ul style="list-style-type: none"> • Acid & bases do not react with each other. • Acid mixed with bases neutralizes each other (✓) 		Class room	Fill in the blank True and false	After every topic

		<ul style="list-style-type: none">• Acid mixed with bases make stronger bases.• Acid mixed with bases make stronger acids <p>5. Bases are sometimes called alkali (T/F)</p> <p>6. NaOH and KOH are strong bases (T/F)</p> <p>7. Salt is formed by the complete or incomplete replacement of the hydrogen ion of an acid by a basic radical</p>				
--	--	--	--	--	--	--

Learning unit	Topics	Recommended formative assessment	Theorydays /hours	Learning place	Recommended methodology	Schedule dates
Lu -4 ACIDS, BASES & SALTS	Define Acids General properties of acids Example of Acids Action of different indicators on acids Define Bases General properties of Bases Example of Bases Action of different indicators on Bases Define salts Kinds of salts Example of salts Neutralization Titration	8. A process in which an acids react completely with base to produce a salt and water is known as neutralization (T / F) 9. A titration measures the amount of a solution of known concentration required to react with a measured amount of a solution of unknown concentration. (T / F) 10. The compound that is produced by any neutralization reaction is CO ₂ . (T/ F) 11. The equivalence point in a titration is the point when the indicator changes color. (T/ F)		CLASS ROOM	Fill in the blank True and false	After every topic

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOUR	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU- 5 CHEMICAL BOND	1. Types of chemical bond 2. characteristic of covalent bond Ionic bond and Metallic bond Difference b/w covalent and ionic bond.	1.The attractive force which bonds atoms together is called a chemical bond (T / F) 2. Atoms can only forms chemical bond by either gaining or losing electron (T / F) 3.A hydrogen bond is stronger than ionic or covalent bond (T / F) 4. Covalent bonds involving sharing electrons (T / F) 5. A triple bonds involves three and three electrons (T / F) 6. Ionic compounds are generally solid at room temperature. (T / F) 7. A pure covalent compound conduct electricity (T / F) 8. The ionic bonds are formed by the transference of electrons from one atom to another (T / F) 9. A covalent bond which is formed b/w similar atoms is called Polar bond (T / F)		Class room	True and false	After every topic

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOUR	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU- 6 SOLUTIONS	1. Define Solution What is solute What is solvent Examples Saturated Solution Unsaturated Solution	1. In a solution , solute is a substance which is dissolved and solvent is the substance doing the dissolving (T / F) 2. An increase in particle size will increase the rate of solution of a solid in liquid (T / F) 3. A homogenous mixture of two or more substances is called <u>solution</u> 4. A saturated solution contains dissolved solute in equilibrium with un dissolved solute (T / F)				AFTER EVERY MODULE

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOUR	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU- 7 STATES OF MATTER	Define Matter States of matter Characteristic of solid , Liquid Gases Plasma	<p>1. When solid changes into liquid is called :</p> <ul style="list-style-type: none"> • Evaporation • Vaporization (✓) • Melting <p>2. When a solid changes directly into gas called:</p> <ul style="list-style-type: none"> • Sublimation • Evaporation (✓) <p>3. When a liquid changes into solid called</p> <ul style="list-style-type: none"> • Melting • Freezing (✓) • Condensation <p>4. Which states hold its own shape</p> <ul style="list-style-type: none"> • Solid • Liquid (✓) • Gas <p>5. Liquid expand in all direction to take the shape of the container it is in (T/ F)</p> <p>6. Which states of matter are not able to hold their own shape:</p> <ul style="list-style-type: none"> • Gases • Liquid • Liquid and Gases (✓) 		Class room	True and false	After every topic DULE

LTC-011 Patient Sampling (Phlebotomy), Infection Control and Lab Safety

3(1-2)

Competencies

1. Acquaint self with the organization and function of the medical laboratory

Learning objectives

- Explain the function of a medical or clinical laboratory
- Draw an organizational chart of a typical hospital laboratory
- Describe the functions of the different levels of laboratory personnel
- List the major departments and a test that would be performed in each department

Competencies

2. Discuss the role and responsibilities of a Medical Laboratory Technician

Learning objectives

- a. List personal qualities that are desirable in a medical laboratory professional
- b. Describe the educational requirements for medical technologists and medical laboratory technician
- c. Explain the relationship between the medical laboratory professional and the patient Document laboratory actions and clerical functions using medico-legal guidelines

Competencies

3. Apply knowledge of anatomy and physiology to phlebotomy

Learning objectives

- a. Identify normal anatomy and physiology of the veins and capillary.
- b. Demonstrate skill in selection of veins and recognizing problems.

Competencies

3. Demonstrate proficiency in collecting blood specimens for laboratory testing.

Learning objectives

What you will learn as you master the competency:

- a. Demonstrate blood specimen collection.
- b. Demonstrate obtaining blood cultures.
- c. Demonstrate the use of a Lancet or a Micro lance for a Micro draw or an Infant Heel Stick.

Summary

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
INFECTION CONTROL & LAB SAFETY	LU-1	Define infection control & lab safety.	Student should be able to understand the basic concept of infection control and Lab safety protocols along with Lab hazards.	Lecture . Multimedia presentation. Video Presentation	Demonstration of Lab safety Hazards and precautions	Student should be able to know the use of gloves, apron, mask, Disposal of sharps, spilling , splash of chemicals	Class room Lab	2.5 hrs. 2 hrs.	After every topic
		Lab safety Procedures. Use of Personal protective materials followed by the safety guide lines							
	LU-2	Importance of Hand Washing	Student should be able to know and understand the importance and steps of hand washing in clinical lab	Lecture , Video presentation	Demonstration of procedure of Hand washing	Student should be able to perform proper hand washing procedure	Class room Lab	1 hrs. 7.5 hrs.	After every topic
		Steps of Hand washing							

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
Infection control & lab safety	LU -3 Disposal of Infectious waste and sharps	Describe infectious and non infectious waste. Handling of sharps. Safe Handling of syringes (how to capped or un capped the syringes.) Disposal of sharps, needles, syringes	Learner should be able to understand the infectious and non infectious waste. . And also know the handling of sharps and their disposal.	Lecture Multi media presentation, Video presentation	Demonstration of handling of sharps, needle , syringes and their discarding techniques.	Student should be able to perform safe handling of sharps and their disposal	Class room Lab	2 hrs 7.5 hrs.	After every topic

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
Phlebotomy	LU-4 Phlebotomy (Patient sampling)	1.Introduction of Phlebotomy. <ul style="list-style-type: none"> • Venipuncture • Cappillary puncture. 2.Psychology of Blood Drawing.	The leaner should be able to understand : . The role of phlebotomist in clinical lab. a. the different methods of blood drawing.	. Lecture a. Visual Presentation	Demonstration of Physical techniques & Good communicating skills with the patient.	The learner should be able to identify the site for blood drawing & also develop good communicating skills with the patient during the procedure.	Class room Lab	2 hrs. 2 hrs.	After every topic

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	scheduled dates
	LU- 5 Introduction of materials	1. General requirements of materials during phlebotomy. 2. Use of syringes , needles, vacutainer etc	. Learner should be able to know the requirement of materials in blood drawing procedure & use of syringes, needles , multiple vacutainer , butterfly wings etc.	Lecture , presentation, video presentation	Demonstration of materials require in blood collection. Identify & usage of different syringes, multiple vacutainer, Butterfly needle.	Learner should be able to understand the use of material during blood collection and also identify usage of diff syringes, vacutainer, butterfly.	Class room Lab	2 hrs. 5 hrs.	After every topic
	LU- 6 Anticoagulants	1. Define blood , serum , plasma. 2. Anticoagulants & its role. 3. Use of different color top tube.	. The learner should be able to differentiate b/w the different color top tube and its usage.	Lecture Multimedia presentation	Identification of different color top tube with its respective anticoagulant and usage.	A student should be able to identify different anticoagulant tubes & its usage	Class room Lab	2 hrs. 3 hrs.	After every topic.

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	scheduled dates
	LU- 7 Procedure of Blood drawing	1. General preparation. 2. Performing the venipuncture step by step. 3. Performing the capillary puncture.	The learner should be able to know the procedure of both methods of blood drawing very clearly step by step.	Lecture Video presentation	Demonstration of blood drawing by both methods: Venipuncture. Capillary puncture.	Student should be able to perform phlebotomy independently.	Class room Lab	2.5 hrs. 30 hrs.	After every topic
	LU- 8 Sources of error during drawing procedure.	1. Identification of patient. 2. Quantity of blood 3. Labelling error 4. Skin reaction (Hematoma, Petechia) 5. Recollection of Blood sample	The student should be able to know the sources of error occur during phlebotomy.	Lecture . Multimedia presentation. Video Presentation	.Demonstration of Sources of Error.	Phlebotomist should know the sources of error in case of improper blood drawing.	Class room Lab	4 hrs. 15 hrs.	After every topic.

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	scheduled dates
					ACTIVITY: Performance evaluation checklist. (Procedure , Purpose, objective , Equipment, Safety Precautions.)	The phlebotomist should be able to collect a quality blood specimen following bio safety guide line	Lab		After every topic

Assessment

Learning unit	Topics	Recommended formative assessment	Theory days/hours	Learning place	Recommended Methodology	Schedule dates
LU-1 Introduction of infection control and lab safety	Define infection control & lab safety. Lab safety Procedures. Use of Personal protective materials followed by the safety guide lines	1.Routine precaution of daily practice (hand washing Personal protective , cleaning of equipment) will reduce the transmission of infections.(T/F) 2.Gowns & gloves should not worn in common areas such as nursing stations , eating area etc (T/F) 3.The use of gloves is an effective substitute for hand washing (T/F) 4. In a hospital routine precautions are responsibility of doctors and nurses only (T/F) 5. Mask and goggles must worn for care activities such as care of patient who have a cough or vomiting (T/F) 6. The objective of routine precaution is to prevent the spread of infection within hospital <ul style="list-style-type: none"> • From Patient to Patient • From patient to staff • From staff to patient • From Staff to staff • All of above ✓ 		Class room	True & False	After every module

		<p>7.Using the principle of ‘ dirty to clean’ one should remove protective equipment in the following order:</p> <ul style="list-style-type: none"> • Mask/gown/goggles/gloves • Gloves ,gown , goggles, mask (T) • Gown, mask, goggles , gloves • Goggles, mask, gloves , gown <p>8. Handwashing is the most preventive method to prevent the spread of infection (T/ F)</p> <p>9. Disinfection kills all orgs (T/ F)</p> <p>10.The majority of cold germs are spread through hand to hand contact (T / F)</p>				
--	--	---	--	--	--	--

Learning unit	Topics	Recommended formative assessment	Theory days/hours	Learning place	Recommended Methodology	Schedule dates
LU-2 Hand Washing	Importance of Hand Washing Steps of Hand washing	1. The use of gloves is an effective substitute for hand washing (T/ F) 2. You must wash your hands after removing your mask (T/ F) 3. Alcohol based hand rinse SHOULD NOT be used <ul style="list-style-type: none"> • Prior to patient contact • If the finger nails are chipped • If the patient has respiratory infection • If hands are visibly dirty (T) 4. Hand washing removes germs picked up at work (T / F) 5. After washing hands & rinsing well turn off taps with your hands (T/F)		Class room	True & False	After every module

		<p>6. The most imp procedure for the prevention of infection from germs & viruses is</p> <ul style="list-style-type: none"> • Wearing gloves • Properly bagging used linen • Effective hand washing ✓ • Wearing protective eye wear <p>7. The following statement is true about effective hand washing:</p> <ul style="list-style-type: none"> • Keep elbow lower than hand when washing & rinsing. • Use friction to clean B/w fingers, palms, nail bed, back of hands & wrist (✓) • Wash for 30 Sec • Use a paper towel to turn off light switch. <p>8. How many germs are there on hand at any given time</p> <ul style="list-style-type: none"> • 5000 (✓) • 50,000 • 500 				
--	--	--	--	--	--	--

Learning unit	Topics	Recommended formative assessment	Theory days/hours	Learning place	Recommended Methodology	Schedule dates
LU -3 Disposal of Infectious waste and sharps	Describe infectious and non infectious waste. Handling of sharps. Safe Handling of syringes (how to capped or uncapped the syringes.) Disposal of sharps, needles, syringes	1. Most sharps injuries are as result of carelessness in handling or in disposal (T/F) 2. The most effective method of reducing needle stick injury has been the use of self blunting type devices (T/ F) 3. Sharps or needles should be discarded in Sharp containers (T/ F) 4. Needle should not bend , recapped , or remove from syringes T/ F) 5. Infectious waste do not require to labeled biohazard or color code (T/ F)		Class room	True and false	After every module

Learning unit	Topics	Recommended formative assessment	Theory days/hours	Learning place	Recommended Methodology	Schedule dates
LU-4 Phlebotomy (Patient sampling)	<p>1.Introduction of Phlebotomy.</p> <ul style="list-style-type: none"> • Venipuncture • Cappillary puncture. <p>2.Pschyology of Blood Drawing.</p>	<p>1. Actual and reliable lab test depend upon having quality blood specimens (T/F)</p> <p>2. If only few drops of blood required, the sample can be collected by venipuncture (T / F)</p> <p>3. Blood drawing can be done by two methods (T / F)</p> <p>4. Venipuncture is used when large amount of blood needed for the test (T / F)</p> <p>5. Capillary method is used when small amount of blood is required for the test (T / F)</p> <p>6. Good communication skill is not necessary for phlebotomy (T / F)</p>		Class room	<p>True and false</p> <p>Fill in the blanks</p>	After every module

		<p>7. The person who obtain blood from the patient in lab is called <u>Phlebotomist</u></p> <p>8. Always wear <u>gloves</u> during blood drawing procedure</p> <p>9. The <u>ring finger</u> of a child / adult use for the capillary method</p> <p>10. Do not use thumb or index finger for capillary method as these are most sensitive (T / F)</p>				
--	--	--	--	--	--	--

Learning unit	Topics	Recommended formative assessment	Theory days/hours	Learning place	Recommended methodology	Schedule dates
LU- 5 Introduction of materials	<p>1. General requirements of materials during phlebotomy.</p> <p>2. Use of syringes , needles, vacutainer etc</p>	<p>1.Lancets, needle , & syringes must be <u>sterile & dry</u> .</p> <p>2. The vaccum tube system consist of four parts (T / F)</p> <p>3.Multiple sample needles used when more than one tube of blood from a patient . (T / F)</p> <p>4. The color of the vacuum tube stopper indicates the additives in the tube . (T / F)</p> <p>5. The opening through the center of the needle shaft is called the <u>gauge</u> .</p> <p>6. The guage of the needle used for the venipuncture is usually <u>20- 22 gauge</u> .</p>		Class room	<p>True and false</p> <p>Fill in the blanks</p>	After every module

Learning Unit	Topics	Recommended formative assessment	Theory days/hours	Learning place	Recommended methodology
LU- 6 Anticoagulants	<p>1. Define blood , serum , plasma.</p> <p>2. Anticoagulants & its role.</p> <p>3. Use of different color top tube.</p>	<p>1. Which of the following statements is true concerning human blood :</p> <ul style="list-style-type: none"> • The blood of all normal human contains Red & white cells , Platelet , Plasma. (✓) • Some human beings normally lack the ability to produce plasma . • Proteins are not a normal components of human blood . <p>2. Erythrocyte is another name for.</p> <ol style="list-style-type: none"> 1. Red cell . (✓) 2. White cell 3. Platelet <p>3. Which of the following blood components provide the major defense against invading bacteria and viruses</p> <ol style="list-style-type: none"> 4. Red cell . 5. White cell(✓) 6. Platelet 		Class room	<p>True and false</p> <p>Fill in the blanks</p>

		<p>4. The relatively clear liquid medium which carries the other cell of blood is called</p> <ol style="list-style-type: none"> 7. Lipid . 8. Plasma(✓) 9. Antibody. <p>5. Which of the following are likely to increase in number when bacteria attack the body</p> <ol style="list-style-type: none"> 10. Erythrocytes 11. leukocytes(✓) 12. thrombocytes <p>6. Green top tubes contain sodium or lithium heparin used in chemistry (T/ F)</p> <p>7. Red color tube does not contain a anticoagulant (T/ F)</p> <p>8. Which of the following will be used when a serum sample is required</p> <ol style="list-style-type: none"> 1. EDTA 2. Heparin 3. Sodium Citrate 4. Clot activator (✓) 			
--	--	--	--	--	--

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOG
LU- 6 Anticoagulants	1. Define blood , serum , plasma. 2. Anticoagulants & its role. 3. Use of different color top tube.	9. which of the following samples will be utilized for plasma electrolytes? 0. EDTA 1. Heparin (√) 2. Sodium Citrate 3. Clot activator 10. All of the following test can be performed on an EDTA SAMPLE Except 1. White blood cell count 2. ESR 3. Differential 4. Glucose (√)		Class room	True and false

Learning unit	Topics	Recommended formative assessment	Theory days/hours	Learning place	Recommended Methodology
LU- 7 Procedure of Blood drawing	1. General preparation. 2. Performing the venipuncture step by step. 3. Performing the capillary puncture.	1. Which of the following collection methods will result in the BEST SAMPLE for analysis by the laboratory: 1. Syringe and butterfly 0. Vaccum collection system (✓) 2. Cappillary puncture on finger 3. Capillary puncture 2. Which of the following identifiers would be appropriately accurately identify the patient: 1. Patient name and identification number. (✓) 2. Patient name and room number 3. Physicians name and room number 4. Patient and physician's name.		Class room	True and false

		<p>3.If you cannot locate the vein within one minute , release the tourniquet and allow blood to flow freely for 1 – 2 min before tightening the tourniquet again (T / F)</p> <p>4. Never tell a patient that drawing blood will hurt (T / F)</p> <p>5.Which of the following is the correct way to finish up a venipuncture procedure:</p> <ol style="list-style-type: none"> 1. Release tourniquet , remove needle, apply pressure,Release tube from holder. 2. Release tube from holder , release tourniquet, remove needle, apply pressure. 3. Remove tourniquet, release tube from holder, remove needle, apply pressure. (√) 4. Release tourniquet , remove needle, release tube from holder , apply pressure. 			
--	--	---	--	--	--

Learning unit	Topics	Recommended formative assessment	Theory days/hours	Learning place	Recommended Methodology
LU- 8 Sources of error during drawing procedure.	1. Identification of patient. 2. Quantity of blood 3. Labelling error 4. Skin reaction (Hematoma, Petechia) 5. Recollection of Blood sample	1. Leakage of blood into the tissues due to the needle partially being inserted into a vein will result 1. Hemoconcentration 2. Lymphostasis 3. Infection. 4. Hematoma (✓) 2. If left the tourniquet more than the recommended time period which of the following analytes will be falsely increased in the blood: 1. Sodium 2. Potassium (✓) 3. Glucose 4. LDH. 3. Hemoconcentration is / may be due to • Having patient pump fist repeatedly(✓) • Releasing tourniquet after 1 min • Cleansing site with alcohol • Drawing from medial cubical vein 4 Proper labeling on sample is essential requirement (T/ F) 5. Multiple pricks indicates good practice of blood drawing (T / F)		Class room	True and false Fill in the blanks

HGC - 018

Applied Computer Skill - I

3(1-2)

Name of course: HGC-018 Applied Computer Skills

Overall objective of course:

This survey course provides students with an overview of computer technology topics – Hardware, software, networking, Internet, data management, system design, ethical issues, mobile computing, programming, and careers in computer technology. It is designed as a first course for students pursuing a degree in the computer field

Competencies gained after completion of course:

This course will develop students' knowledge of:

- a. Technical terminology related to computers, electronic communications, and applications software.
- b. Electronic systems, communications networks, and applications in use today.
- c. The societal impact of Information Systems.
- d. The functions of an operating system, including allocating system resources, and media and file management.
- e. Control structures and development issues associated with computer programming.
- f. Bibliographic resources to identify and synthesize current information.

Summary

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	scheduled dates
Module 1: Introduction to computer Science	LU1	Introduction	Use correct terminology associated with information Technology Describe an Information System using examples from business, education, and personal use	Online Lecture. Multimedia presentation.		Students should be able to understand the importance of Information technology in Education	Online Class-rooms, Lab	1 Hr 1 Hr/Day For 4 Day/week	After every topic
	LU2	History of Computer Science 1. Abacus 2. Generation Of Computers 3. Languages	Students able to know the brief history of information technology	Online Lecture. Multimedia presentation. Video Demonstration		Students should be able to understand the history and Background of Computer Science	Online Class-rooms Lab	1 Hr 1 Hr/Day For 4 Day/week	After every topic
Module 2: Introduction of Hardware	LU3	CPU and Memory	Define CPU in terms of manufacturer, model number, speed, maximum addressable	Online Lecture. Multimedia presentation. Video	Activity: Students will prepare a research document	Students able to know structure of CPU and importance	Online Class-rooms Lab	2 Hr 1 Hr/Day For 4 Day/week	After every topic

			RAM, and bus size	Demonstration	on the Importance of CPU.	of Memory			
	LU4	Data storage device	Use correct terminology associated with information processing & Data storage	Online Lecture. Multimedia presentation. Video Demonstration	Activity: Students will work on Microsoft Access	Students able to understand the data processing and storage devices	Online Class-rooms Lab	1 Hr 1 Hr/Day For 4 Day/week	After every topic
	LU5	Input/output device	Compare input and output devices found with a variety of PCs – sub-notebooks, notebooks, laptops, desktops, and etc	Online Lecture. Multimedia presentation. Video Demonstration	Activity: Students will gather the list of I/O devices	Students able to understand the input and output devices	Online Class-rooms Lab	1 Hr 1 Hr/Day For 4 Day/week	After every topic
Module 3: Introduction to Software	LU6	Standard & Application Software's	List and describe classes of software available for use today	Online Lecture. Multimedia presentation. Video Demonstration		Students will able to understand the software's and its applications	Online Class-rooms Lab	2 Hr 1 Hr/Day For 4 Day/week	After every topic
Module 4: Operating Systems	LU7	What is Operating Systems: <ul style="list-style-type: none"> Standards OS Windows 	Identify common elements in a graphical user interface. Compare and	Online Lecture. Multimedia presentation.		Students able to understand the OS and types of	Online Class-rooms Lab	3 Hr 1 Hr/Day For 4	After every topic

		<ul style="list-style-type: none"> Linux Macintosh 	contrast operating systems to include graphical user interface and nongraphical user interface environments.	Video Demonstration		Operating Systems		Day/week	
Module 5: Networks	LU8	Network basic Network Standards Section of Networks	Identify media, hardware, software, and procedural components linking networks systems	Online Lecture. Multimedia presentation. Video Demonstration		Students able to understand the Networks and types of networks	Online Class-rooms Lab	2 Hr 1 Hr/Day For 4 Day/week	After every topic
	LU9	The Internet and the World Wide Web & Web Page	Evaluate options for connecting to the Internet. Send e-mail, and identify resources available on the Web.	Online Lecture. Multimedia presentation. Video Demonstration		Students able to understand the Internet and Communication System	Online Class-rooms Lab	2 Hr 1 Hr/Day For 4 Day/week	After every topic
Module 6: Information Systems in Education	LU10	Introduction to Education Application	Discuss current ethical issues from personal, business, and education perspectives. Describe how spreadsheet packages are used in a variety of settings.	Online Lecture. Multimedia presentation. Video Demonstration		Students able to understand the education application and their structures i.e. LMS	Online Class-rooms Lab	2 Hr 1 Hr/Day For 4 Day/week	After every topic

			Describe how presentation graphics packages are used in a variety of settings. List the advantages and disadvantages of database systems.						
Module 7: Database	LU11	Introduction to database Productivity Software -- Spreadsheets Databases	List the advantages and disadvantages of database systems. Develop strategies necessary to retrieve electronically published articles.	Online Lecture. Multimedia presentation. Video Demonstration		Students able to understand the Database and types of database.	Online Class-rooms Lab	1 Hr 1 Hr/Day For 4 Day/week	After every topic

Practicum:

Students will work on the Microsoft Offices (Word, Excel, PowerPoint and Access) and Adobe Photoshop as practicum 1 Hour for 4 days a week.

Assessment

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended methodology	Scheduled dates
LU1 Introduction to computer Science	Module 1	Online Class	Exmaple	<ul style="list-style-type: none"> • Multiple Choice Questions • Best Choice Questions • Viva 	After every module
LU2	Module 1	Online Class	<p>MCQs</p> <p>1. CD-ROM stands for _____</p> <p>a. Compactable Read Only Memory b. Compact Data Read Only Memory c. Compactable Disk Read Only Memory d. Compact Disk Read Only Memory</p> <p>2. VGA is</p> <p>a. Video Graphics Array b. Visual Graphics Array c. Volatile Graphics Array d. Video Graphics Adapter</p> <p>3. IBM 1401 is _____</p> <p>a. First Generation Computer b. Second Generation Computer c. Third Generation Computer d. Fourth Generation Computer</p>	<ul style="list-style-type: none"> • Multiple Choice Questions • Best Choice Questions • Viva 	After every module

			<p>4. WAN stands for</p> <ul style="list-style-type: none">a. Wap Area Networkb. Wide Area Networkc. Wide Array Netd. Wireless Area Network <p>5. Chief component of first generation computer was</p> <ul style="list-style-type: none">a. Transistorsb. Vacuum Tubes and Valvesc. Integrated Circuitsd. None of above		
--	--	--	---	--	--

HGC - 015
Summary:

Islamic Studies

1(1-0)

Modules	Learning Units(LU)	Topics	Learners should be able to achieve these Outcomes	Theory Days/hours	Workplace Days/hours	Credits
MODULE 1 (Orientation)	NA	. Introduction . Course outlines . Method and procedure regarding classes . Assessment criteria	a. Clear understanding regarding their input to the subject	01 hr. 01 hr.	NA	NA
MODULE 2 (Semester 1)	Learning Unit 1	1.Preservation of the Holy Quran 2. Preservation of the Ahadith of the Holy Prophet(s.a.w.) 3.Selection from the Holy Quran 4. Selection from the Hadith of the Holy Prophet (s.a.w.)	By the end of the lesson students should be able to, 1. Outline the main stages of compilation of the Quran 2. Outline the main stages of compilation of Hadith 3. Reasons to why both were preserved 4. Importance of their preservation 5. Quranic concept about the world and its nature 6. Relationship of man with this world 7. Teachings of the Holy Prophet(s.a.w.) to understand his status	04 hours	-	-

	Learning Unit 2	1.Rights of Allah and Rights of His creation: Theory & Practice 2.Companions of the Holy Prophet (s.a.w) 3.Stories of the Prophets Ibrahim(a.s.), Yousaf(a.s) and Isa (a.s.) 4.Muslims contribution to science	- The different kinds of rights and then the expected duties towards others - basic demands of belief - Main lessons from the lives of the Prophets (a.s.) - Importance of the Muslim contribution to the science	04 hour	-	-
--	------------------------	---	--	---------	---	---

	<p>Learning Units 3</p>	<p>1.Relation with non Muslims</p> <p>2.Freedom of thought and living in Islamic perspective</p> <p>3.Muslim world : Past and future</p> <p>4.Merits of serving humanity in Islam</p>	<ul style="list-style-type: none"> - Main teachings of Islam regarding behaving towards other religions - Limitations and restrictions with permissions granted in Islam in few aspects of life - Brief introduction of Islamic world and its importance - Identify some benefits which other can get from us as individuals 	<p>04 hours</p>		
	<p>Learning Unit 4</p>	<p>1.Modern issues in medical science and the Islamic point of view</p> <p>2.Pillars of Islam</p>	<ul style="list-style-type: none"> - Know the principles to apply them on newly born issues in medical science - Know the basic teachings with importance of the pillars of Islam 	<p>04 hours</p> <p>1 hour/week</p> <p>4 days/month</p>		

Semester Plan:

Unit 1				
	week: 01	week: 02	week: 03	week: 04
Topics	1. Introduction 2. Moral teachings of the Holy Quran	<ul style="list-style-type: none"> Moral teachings of the Holy Prophet(S.A.W) 	<ul style="list-style-type: none"> Health and disease ,an Islamic framework 	<ul style="list-style-type: none"> Nursing in the Islamic history
Lecture Notes and reading material	<ul style="list-style-type: none"> Will be given during the class 	<ul style="list-style-type: none"> Will be given during the class 	<ul style="list-style-type: none"> Will be given during the class 	<ul style="list-style-type: none"> Will be given during the class
Tests			<ul style="list-style-type: none"> Quiz/Writt 	<ul style="list-style-type: none"> Quiz

Unit 2				
	week: 05	week: 06	week: 07	week: 08
Topics	<ul style="list-style-type: none"> • Preservation of the Revelations 	<ul style="list-style-type: none"> • Nursing and the rights of fellow beings (<i>Huquq ul Ibad</i>) 	1.Nursing and the rights of fellow beings (<i>Huquq ul Ibad</i>)	Contemporary issues in the modern Medical science and Religious Views
Lecture Notes and reading material	<ul style="list-style-type: none"> • Will be given during the class 	<ul style="list-style-type: none"> • Will be given during the class 	<ul style="list-style-type: none"> • Will be given during the class 	<ul style="list-style-type: none"> • Will be given during the class
Tests	<ul style="list-style-type: none"> • Unit 1 test 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Quiz 	<ul style="list-style-type: none"> • Students' presentations

Unit 3

	week: 09	week: 10	week: 11	week: 12
Topics	<ul style="list-style-type: none"> • Reason and revelation 	<ul style="list-style-type: none"> • Faith and practice: an analytical approach 	<ul style="list-style-type: none"> • Relations with Non Muslims (teachings and practice) 	<ul style="list-style-type: none"> • Nursing profession and Modesty

Lecture Notes and reading material	• Will be provided in the class	• Will be provided in the class	• Will be provided in the class	• Will be provided in the class
Tests	• Mid term exam	•		• Quiz

Unit 4

	week: 13	week: 14	week: 15	week: 16
Topics	Pillars of Islam :significance in the practical life	1.Muslims' contribution in the Medical field 2.Pillars of Islam: Description and Significance	1.Social norms and the Nursing 2. Selected supplications	• End of Term exam
Lecture Notes and reading material	•	• Will be Provided Before Lecture	• Will be Provided Before Lecture	
Tests	• Unit 4 test	•	•	• Final Term exam

HGC - 017

English - I

1(1-0)

Course Name: English

Rationale

Students level of understanding, and analytical skills should be enhanced. They will be able to communicate in English in a better way.

Aim

To provide opportunities for students to enhance their comprehension, grammar, listening, speaking and writing skills.

Objectives

The main objectives of this course are;

- Students will be able to comprehend English.
- They will be able to converse in English in a better way.
- Students will be able to write different reports in their required field.

Summary

Modules	Learning Units(LU)	Topics	Learners should be able to achieve these Outcomes	Theory Days/hours	Workplace Days/hours
Module 1 (orientation course) Module 2 (1 st semester) Module 3 (2 nd semester)					
Module 2 (1 st semester)	1. Communication Skills	1. Introduction to communication skills. 2. Types of effective communication 3. Techniques of effective communication.	1. Learn about the needs of effective communication. 2. Learn about the importance of effective communication. 3. Learn about different types of effective communication. 4. Learn / understand about the various techniques of effective communication. 5. Apply their knowledge in different situation.		

Module 2 (1 st semester)	2. GRAMMER	<ol style="list-style-type: none"> 1. Vowel & Consonants 2. Forms of Sentences 3. Compound Sentences 4. Preposition 5. The Present Tenses (2hrs) 6. The Past Tenses (2hrs) 7. Future + Revision (2hrs) 	<p>By the end of the lesson students should be able to,</p> <ol style="list-style-type: none"> 1. Differentiate between Vowel & Consonants sounds. 2. Explain different forms of sentences. 3. Complete the given exercises with the help of Conjunctions. 4. Use correct preposition in the given sentences. 5. Recall the basic rules of present tenses. Convert the given sentences from one tense to other. 6. Revise the rules of past tenses. Use the past tense in its correct context. 7. Learn the rules of future tense. Revise all the tenses. Convert one tense to another. 8. Learn about all the 7 punctuation marks. Use them correctly in the given exercises. 9. Differentiate between different parts of speech. Use them correctly in the given exercises. 10. Write the correct verb according to its subject. 11. Differentiate between prefix suffix & root words. Complete the given exercises about prefix, suffix & root words. 	11 DAYS	
--	------------	---	---	---------	--

Module 2 (1 st semester)	3.Comprehension	<ol style="list-style-type: none"> 1. Comprehension passages from the given in books. 2. English grammar & composition by Wren & Martin. 3. Junior English Grammar. 4. http://www.teachervision.fen.com/tv/printables/0876281420121.ptf 	<ol style="list-style-type: none"> 1. Comprehend the given passages. 2. Revise the given passage. 3. Answer the given questions. (Oral & Written) 4. Search the past tense from the passage. 5. Rewrite the given passage in their own words. 	4 DAYS	
Module 2 (1 st semester)	4.Composition	<ol style="list-style-type: none"> 1. Paragraph writing 2. Essay writing 	<ol style="list-style-type: none"> 1. Write a paragraph/essay on the given topic. 2. Differentiate between paragraph and essay writing. 3. Use different grammar components in each given topics. 4. Differentiate between essay. 	4 DAYS	

Lesson Plan

LU	Topic	Duration depends on previous knowledge	Learning outcomes After completing this topic, the learner should be able to:	Materials required NOTE: Participants should have their own workbooks and pens	Learning place
LU 1. COMMUNICATION SKILLS	Introduction to communication skills.	1 LESSION (60 MINTS) 60 min	<ol style="list-style-type: none"> 1. Learn about the needs of effective communication. 2. Learn about the importance of effective communication. 3. Apply their knowledge in different situation. 	1. Online presentation	Learning Management System (LMS)
LU 2. COMMUNICATION SKILLS (CONTINUED)	Introduction to communication skills.	1 LESSION (60 MINTS) 60 min	<ol style="list-style-type: none"> 1. Learn about the needs of effective communication. 2. Learn about the importance of effective communication. 3. Apply their knowledge in different situation. 	1. Online presentation	Learning Management System (LMS)

<p>LU 3 COMMUNICATION SKILLS & GRAMMAR</p>	<p>Types of effective communication</p> <p>Vowels and Consonants</p>	<p>1 LESSION (60 MINTS)</p> <p>40 min</p> <p>20 min</p>	<ol style="list-style-type: none"> 1. Learn about the importance of effective communication. 2. Learn about different types of effective communication. 3. Apply their knowledge in different situation. 4. Differentiate between Vowel & Consonants sounds. 	<ol style="list-style-type: none"> 1. Online presentation 1. Work sheets 2. White board 2. Text book (English Grammar and composition by Wren & Martin) 	<p>Learning Management System (LMS)</p>
<p>LU 4. COMMUNICATION SKILLS & COMPREHENTOIN</p>	<p>Techniques of effective communication</p> <p>Comprehension</p>	<p>1 LESSION (60 MINTS)</p> <p>30 min</p> <p>30 min</p>	<ol style="list-style-type: none"> 1. Learn / understand about the various techniques of effective communication. 2. Apply their knowledge in different situation. 3. Comprehend the given passages. 4. Revise the given passage. 	<p>Online presentation Work sheets White board</p>	<p>Learning Management System (LMS)</p>

			5. Answer the given questions. (Oral & Written)		
LU 5. COMPREHENSION & GRAMMAR	Comprehension Forms And Sentences	1 LESSION (60 min) 20 min 40 min	1. Use different grammatical components in given topic. 2. Comprehend the given passages. 3. Revise the given passage. 4. Answer the given questions. (Oral & Written)	1. Work Sheets 2. White Board 3. Oral presentation	Learning Management System (LMS)
LU 6. COMPOSITION	Paragraph writing	1 LESSION (60 min) 60 min	1. Write a paragraph on the given topic.		Learning Management System (LMS)
LU 7. COMPOSITION & GRAMMAR	Paragraph writing Compound sentences	1 LESSION (60 min) 40 min 20 min	1. Write a paragraph on the given topic. 2. Demonstrate different forms of sentences. 3. Differentiate between simple		Learning Management System (LMS)

			and compound sentences.		
LU 8. & COMPREHENSION	Comprehension	1 LESSION (60 min) 60 min	4. Comprehend the given passages. 5. Revise the given passage. 6. Answer the given questions. (Oral & Written).	1. Work Sheets 2. White Board 3. Oral Presentation	Learning Management System (LMS)
LU 9. COMPOSITION	Essay Writing	1 LESSION (60 min) 60 min	1. Differentiate between paragraph and essay writing. 2. Write essay on given topics.	1. Work Sheets 2. White Board 3. Online Presentation	Learning Management System (LMS)
LU 10. COMPOSITION (CONTINUED) & GRAMMAR	Essay Writing Preposition	1 LESSION (60 min) 30 min 30 min	1. Differentiate between paragraph and essay writing. 2. Write essay on given topics. 3. Use correct preposition in the sentences. 4. Use different	1. Work Sheets 2. White Board 3. Online Presentation	Learning Management System (LMS)

			grammatical components in given topics.		
LU 11. GRAMMAR	The Present Tense	1 LESSION (60 min) 60 min	1. Revise the rules of Present Tenses. 2. Use the Present tense in its correct context.	1. Work Sheet 2. A-V Presentation 3. PowerPoint Presentation.	Learning Management System (LMS)
LU 12. GRAMMAR	The Past Tense	1 LESSION (60 min) 60 min	1. Revise the rules of Past Tenses. 2. Use the Past tense in its correct context.	1. Work Sheet 2. A-V Presentation 3. PowerPoint Presentation.	Learning Management System (LMS)
LU 13. GRAMMAR	The Future Tense	1 LESSION (60 min) 60 min	1. Revise the rules of Future Tenses. 2. Use the Future tense in its correct context.	1. Work Sheet 2. White Board 3. Revision work Sheet (Online)	Learning Management System (LMS)
LU 14. GRAMMAR	Revision Exercise of Different Tenses	1 LESSION (60 min) 60 min	1. Demonstrate the rules of all the tenses for enhancement in the communication skills.	1. Work Sheet 2. White Board 3. Revision work Sheet (Online)	Learning Management System (LMS)

LU 15. COMPREHENSION	Comprehension	1 LESSION (60 min) 60 min	<ol style="list-style-type: none"> 1. Comprehend the given passages. 2. Revise the given passage. 3. Answer the given questions. (Oral & Written) 	<ol style="list-style-type: none"> 4. Work sheet 5. Website (Online Comprehension) 	Learning Management System (LMS)
LU 16. COMPOSITION	Essay Writing	1 LESSION (60 Min) 60 min	<ol style="list-style-type: none"> 1. Differentiate between paragraph and essay writing 2. Write essay on given topics. 	<ol style="list-style-type: none"> 1. Work Sheet 2. White Board 3. Online Presentation 	Learning Management System (LMS)
LU 17 COMMUNICATION SKILLS & COMPREHENSION	Communication skills Online Comprehension	1 LESSION (60 min) 30 min 30 min	<ol style="list-style-type: none"> 1. Learn about the needs of effective communication. 2. Learn about the importance of effective communication. 3. Learn about different types of effective communication. 4. Learn / understand about the various techniques of effective 	<ol style="list-style-type: none"> 1. Work Sheet 1. White Board 	

			communication. 5. Apply their knowledge in different situation.		
LU 18. COMPREHENSION	Revision (Online Comprehension + tenses)	1 LESSION (60 min) 60 min		1. Work Sheets 2. White Board 3. Online Comprehension 4. Work Sheet (Revision)	Learning Management System (LMS)

Assessment

Learning Units	Theory hours	Workplace Days	Recommended formative assessment	Recommended methodology	Scheduled dates
LEARNING UNIT 1 Communication Skills			<p>A. True/False statements:</p> <ul style="list-style-type: none"> - There are only three channels for interpersonal communication. T/F - Avoiding of argument is a part of effective communication technique. T/F - Communication Skills are important in our daily life. T/F - Body language is a part of effective Communication. T/F - It is easy to acquire communication Skills. T/F <p>B. MCQs</p> <ul style="list-style-type: none"> i) There are ----- types of communication skills. <ul style="list-style-type: none"> a. 2 b. 3 c. 4 i) The responding step of listening: <ul style="list-style-type: none"> 1. is the result of remembering. 2. is nonverbal. 3. is verbal. 4. can be verbal or nonverbal 	<p>LU 1:QUIZ (MCQS)</p> <p>LU1: ASSIGNMENT</p> <p>LU1: PRESENTATION</p> <p>LU 2: EXERCISE</p> <p>LU1: QUIZ</p> <p>LU3:ASSIGNMEN T</p> <p>LU2: EXERCISE</p> <p>LU3: ASSIGNMENT</p> <p>LU4: ASSIGNMENT</p> <p>LU2: EXERSISE</p> <p>LU 4: ASSIGNMENT</p> <p>LU3: EXCERSISE</p>	<p>Week 1</p> <p>Week 2</p> <p>Week 3</p> <p>Week 4</p> <p>Week 5</p> <p>Week 6</p> <p>Week 7</p> <p>Week 8</p> <p>Week 9</p> <p>Week 10</p> <p>Week 11</p>

			<p>2. Logic and reasoning are key to</p> <ol style="list-style-type: none"> 1. message understanding 2. receiving a message 3. responding to as message 4. critical listening <p>3. Which of the three components are parts of the human communication process?</p> <ol style="list-style-type: none"> 1. Message, recording, feedback 2. Noise, feedback, jargon 3. Message, noise, feedback 4. Feedback, message, critiquing 	<p>LU 4: ASSIGNMENT</p> <p>LU2: EXERCISE LU4: PRESENTATION</p> <p>LU2: EXERCISE</p> <p>LU2: EXERCISE</p> <p>LU2: EXERCISE</p> <p>LU2: EXERCISE</p> <p>LU3: ONLINE PRESENTATION</p> <p>LU4: ONLINE PRESENTATION</p> <p>LU1: ONLINE PRESENTATION LU 3: ASSIGNMENT</p> <p>LU 3: ONLINE PRESENTATION AND EXERCISE</p>	<p>Week 12</p> <p>Week 13</p> <p>Week 14</p> <p>Week 15</p> <p>Week 16</p> <p>Week 17</p> <p>Week 18</p>
--	--	--	--	---	--

<p>LU 2. GRAMMER</p>			<p>How many sounds are there in English language? a. 44 b. 26 c. 42</p> <p>There are form of sentences a. 3 b. 4 c. 5</p> <p>There are main tenses. a. 2 b. 3 c. 4</p> <p>In future tense use ___ a. Will b. Are c. Had</p> <p>The sample present tense is used to ____ a. Express a habitual action and general truth. b. Express a general truth. c. Express a habitual action. d. Non of these</p> <p>There aren't _____ people here. 1. Much 2. Many 3. a lot 4. some</p>		
--	--	--	---	--	--

			<p>You should _____ your homework.</p> <ol style="list-style-type: none"> 1. Make 2. Do 3. Work 4. Give 		
LU 3: COMPREHENSION			<ol style="list-style-type: none"> 1. Rewrite the given passage in your own words. 2. Answer the MCQs from the given Passage. 3. Answer the given questions from the comprehension passage. 		
LU 4: COMPOSITION			<ol style="list-style-type: none"> 1. Write the Paragraph/Essay on the given topic. 		

SEMESTER - II

LTC-012

Blood Banking Physiology and Body Fluids

2(1-1)

Competencies

1. Conduct routine urine analysis

Learning objectives

- 1- State the clinical usefulness of performing a routine urinalysis
- 2- Discuss the collection storage of urine specimens.
- 3- Discuss the underlying principle limitation and clinical significance of reassuring volume output and specific gravity
- 4- Discuss the underlying principle limitation and clinical significance of urine protein pH nitrite , glucose , glucoside esterase blood bilirubin, urobilinogen , and ketone
- 5- Identify the common and pathological sediments found in urine
- 6- State the common and pathological types of urinary calculi
- 7- Develop a flow chart for the analysis of urinary calculi

Competencies

- 2- Conduct routine test for water, electrolytes and acid base balance.

Learning Objectives

- a. Determine electrolytes sodium, potassium, chloride, bicarbonate, calcium.

- b. Calculate anion gap
- c. Calculate osmolarity
- d. Apply the principles of safe laboratory practice.

Summary

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
BLOOD BANKING & BLOOD TRANS-FUSION SERVICES	LU-1 Introduction to Blood banking and its services	1. Background of blood banking 2. Importance of blood bank. 3. definitions related to blood blank (Donor, Recipient, Transfusion services, Urticarial reaction, Unit of blood) 4. Donor Selection & informed consent	Learner should be able to understand the basic concept & importance of blood bank	Lecture , Multi media Presentation, Video presentation	Demonstrate the obtaining donor history procedure ACTIVITY: Obtain donor history	Learner should be able to understand & fill the medical history form for donor selection.	Class room Lab	04 hr 02	After every topic

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
BLOOD BANKING & BLOOD TRANS-FUSION SERVICES	LU-2	Describe the risk factors in blood bank for health worker	Learner should be able to know the ways to protect from risk	Lecture Multi media presentation Video presentation	ACTIVITY : Rotation in Blood bank	Learner should be able to identify risk factor in blood bank	Class room	02hr	After every topic
	Lab						04hrs		

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
BLOOD BANKING & BLOOD TRANS-FUSION SERVICES	LU- 3	Describe the basic requirements of blood storage Describe the transport mechanism of blood bag	Student should be able to know basic mechanism of storage and transport of blood	Lecture Presentation	ACTIVITY : Rotation in Blood Bank	By observation Learner should be able to understand the mechanism of storage and transport of blood bag	Class room	03 hr.	After every topic
	Lab						05 hr.		

	LU- 4 Blood donor record	Maintaining blood donor record Blood donor record	<input type="checkbox"/> Student should be able to know the requirements of blood donor record keeping.	Lecture	ACTIVITY: Demonstration of procedure of record keeping of blood donation And preparation of blood donor card.	Learner should be able to fill the record book and preparation of blood donor card	Class room Lab	03 hr. 05 hr.	After every topic
--	-----------------------------	--	---	---------	---	--	-------------------	----------------------	-------------------

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
BLOOD BANKING & BLOOD TRANS-FUSION SERVICES	LU-5 Blood collection procedure of donor	Describe the steps of blood collection procedure of donor in details	<input type="checkbox"/> Learner should be able to understand the procedure of blood collection	Lecture Multimedia presentation Video presentation	Demonstration of blood collection procedure from donor .	Student should be able to perform blood collection procedure	Class room Lab	02 hr. 10 hr.	After every topic

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	Scheduled dates
BLOOD BANKING & BLOOD TRANS-FUSION SERVICES	LU-6 Screening blood for transfusion transmitted infections	1. Testing Donor Blood <input type="checkbox"/> Serologically to confirm the ABO & Rh gp of the donated blood . <input type="checkbox"/> Screening for transfusion transmitted infection. (hepatitis B, hepatitis C, HIV, Syphilis, Malaria)	Learner should be able to identify the different blood group and also able to know about the transfusion transmissible infection	Lecture Multimedia presentation Video presentation	ACTIVITY: Perform ABO & Rh blood group . Prepare chart for transfusion Transmission infection	Student should be able to perform ABO & Rh blood grouping & preparation of screening chart	Class room Lab	02 hr. 04 hr.	After every topic.

Modules	Learning Units(LU)	Topics	Learner's desired outcomes	Recommended Methodology	Practicum	Skill developed	Work place	Duration	scheduled dates
BLOOD BANKING & BLOOD TRANS-FUSION SERVICES	LU-7 Pre transfusion testing & cross match	. Describe compatibility testing between samples of donor blood with the recipients blood a.	Learner should be able to understand the basic concept of compatibility & non compatibility b/w donor – recipient blood	Lecture Multimedia presentation	Demonstration of Cross match	Student should be able to perform and interpret the results of cross match	Class room Lab	01 hr 04 hr	After every topic
	LU- 8 Issuance of blood bag.	Describe the procedure of blood issuance.	Learner should be able to know the steps of blood issuance procedure	Lecture.	ACTIVITY : Prepare checklist of blood issuance procedure.	Student should be able to identify the steps of blood issuance.	Class room Lab	01 hr 02 hr	After every topic

Assessment

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOG	SCHEDULE DATES
LU-1 Introduction to Blood banking and its services	1. Background of blood banking 2. Importance of blood bank. 3. definitions related to blood blank (Donor, Recipient, Transfusion services, Urticarial reaction, Unit of blood) 4. Donor Selection & informed consent	1. Blood Bank and transfusion services collect, process , store & provide human blood for Transfusion 2. Staff working in blood bank do not at risk of accidental injury (T / F) 3. To protect themselves , staff need to know <ul style="list-style-type: none"> • Importance of hand washing • Use of gloves • Use of personal protective equipment • All of above (√) 4. Person whose blood is collected for transfusion called Donor 5. Sterile plastic bag in which a fixed volume of blood is collected in asuitable amount of anticoagulant called unit of blood . 6. Potential donors should be atleast 17 yrs old (T / F)		Class room	Fill in the blanks True or false	After every topic

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULE DATES
LU-2 Protecting Health care workers.	Describe the risk factors in blood bank for health worker	<ol style="list-style-type: none"> 1. Proper disposal of sharps reduces the sharp injuries (T/ F) 2. For blood bank staff there is no need of personal protective precaution (T / F) 3. Reactive or positive screening bag should be dispose off properly (T / F) 4. Decontaminate all working area to prevent from the infection (T/ F) 		Class room	MCQs	After every module

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU- 3 Blood storage and transport	Describe the basic requirements of blood storage Describe the transport mechanism of blood bag	<ol style="list-style-type: none"> 1. The viability of blood cells in blood for up to 28 – 35 days when stored at 2 – 8 O C. (T / F) . 2. the label on the blood pack should mention the expiry date (T / F) 3. Store food or drink in refrigerator using for blood bag storage. (T / F) 4. Avoid unnecessary opening of refrigerator use for blood storage purpose. (T / F) 5. Blood bags can be store in freezer. (T / F) 6. Blood packs should be stored upright to allow for the separation of plasma and red cells (T / F) 7. To transport blood always use a cool insulated box with sufficient freezer packs. (T / F) 8. It is not necessary to maintain record after issuance of blood packs (T / F) 		Class room	True and false	AFTER EVERY MODULE

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULE DATES
LU- 4 Blood donor record	Maintaining blood donor record Blood donor record	1.It is the responsibility of the staff to maintain proper blood donor record. (T / F) 2. Written consent is not necessary for donor. (T / F) 3. Relevant medical history is require before procedure of blood donation.(T / F)		Class room	True and false	After every topic

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS /HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULE DATES
LU-5 Blood collection procedure of donor	Describe the steps of blood collection procedure of donor in details	<p>1. Blood collection set consisting of a sterile plastic bag with anticoagulant ,IV tubing and large gauge 18 or 19 needle (T / F)</p> <p>2. It is not necessary to fill complete history form of Donor before starting the procedure (T / F)</p> <p>3. Health check of Donor include:</p> <ul style="list-style-type: none"> • Basic physical examination • Weight of the person • Temperature • Blood pressure • Pulse rate • All of above (✓) <p>4. A donor must be left un attended when donating blood (T / F)</p> <p>5. Raise the pressure b/w 60 – 80 mm Hg to enable the veins to be seen and felt. (T / F)</p> <p>6. Clean the required part of the arm with tap water (T/ F)</p>				

		<p>7. One single blood bag pack contain 450ml of blood (T/ F)</p> <p>8. Blood donor should be bled in pleasant , hygienic with privacy (T/F)</p> <p>9. The anticoagulant used in blood collecting bag is CPDA (citrate phosphate adenine) (T / F)</p>				
--	--	--	--	--	--	--

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOUR	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU-6 Screening blood for transfusion transmitted infections	1. Testing Donor Blood <input type="checkbox"/> Serologically to confirm the ABO & Rh gp of the donated blood . <input type="checkbox"/> Screening for transfusion transmitted infection. (hepatitis B, hepatitis C, HIV, Syphilis, Malaria)	1. Screening of all blood donation should be mandatory for testing HIV, Hep B, C, syphilis (T / F) 2. Blood are reactive in screening test can be used for transfusion purpose (T / F) 3. All screen reactive units should be clearly marked (T / F) 4. Screen reactive unit should be disposed safely (T / F) 5. Person who is gp A express A antigen on their red cell (T / F) 6. A person who is gp AB has anti A and Anti B antibody in their serum (Class room	True and false	After every topic

		<p>T / F)</p> <p>7. Discrepancies in ABO grouping can be caused by faulty techniques (T / F)</p> <p>8. The same blood sample as used for ABO blood grouping is not used for Rhesus (Rh) grouping (T/ F)</p>				
--	--	---	--	--	--	--

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOUR	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU-7 Pre transfusion testing & cross match	<ul style="list-style-type: none"> • Describe compatibility testing between samples of donor blood with the recipients blood 	<ol style="list-style-type: none"> 1. The purpose of compatibility testing (cross matching) is to prevent a transfusing reaction (T / F) 2. Several techniques are not available for cross matching blood to detect ABO incompatibility (T/ F) 3. Never use donor red cells that appear Partially hemolyzed, or have an abnormal odour (T / F) 4. Cross match is use to give an indication of blood group compatibility b/e donor and recipient (T/ F) 				AFTER EVERY MODULE

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS /HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
LU- 8 Issuance of blood bag.	Describe the procedure of blood issuance.	1 Inspect the condition of blood and not to issue it if there is a sign of clots in bag (T / F) 2. It is responsibility of lab staff to ensure the correct blood is issued (T/F) 3. it is not necessary to maintain the record after issuing the blood (T/ F) 4.Blood Pack has been damaged or leaking should not be issue (T / F) 5. Blood may be return within half an hour of issuance (T / F)		Class room	True and false	AFTER EVERY TOPIC

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS / HOUR	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
XIII) Fungi	<ul style="list-style-type: none"> • Classification of fungi • Difference between yeast and molds • Fungal habitat • Medically important fungal infection in human (cutaneous, sub cutaneous, systemic infection) • Lab method to identify fungal isolates 	1	Lecture			

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOURS	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULED DATES
XIV) Parasites	<ul style="list-style-type: none"> • Define Parasites • Types of parasites • Effect of parasites on host • Important parasites and their disease e.g. protozoal infection (1	MODULE 1	CLASS ROOM	MCQS	

	Trichomonas, Entamoeba, Giardia etc) Helminth Infection (worms) Arthropod Infection (Mosquito, Tsetse fly, Ticks etc					
--	---	--	--	--	--	--

LEARNING UNIT	TOPICS	RECOMMENDED FORMATIVE ASSESSMENT	THEORY DAYS/HOUR	LEARNING PLACE	RECOMMENDED METHODOLOGY	SCHEDULE DATE
XV) Viruses	<ul style="list-style-type: none"> • General Characteristic & components of viruses • Classification • Replication • Effects • Disease • Virus Like agents • Culturing • Introduction to the newly emerging viral disease. 	1	MODULE 1	CLASS ROOM	MCQS	

LTC-013

Hematology and Clinical Hematology

2(1-1)

Competencies

1. Conduct Blood Collection and the use of appropriate anticoagulants

Learning Objectives.

1. Identify the appropriate anticoagulants for hematological investigations
2. Acquire blood letting Skills
3. Observe safe work practices

Competencies

2. Outline the process of hematopoiesis

Learning Objectives

1. Outline the theories of hematopoiesis
2. Identify the various factors that affect hematopoiesis
3. Identify the varied blood cells in peripheral blood
4. Classification of blood cells

Competencies

3. Perform Complete Blood Count (CBC) using manual and automated methods.

Learning Objectives

1. Use knowledge of dilutions to dilute blood samples with specific reagents.
2. Estimate hemoglobin concentration in blood
3. Explain the principle of hemocytometer
4. Calculate red blood cell indices

Competencies

4. Differentiate anemia based on morphological characteristics and indices.

Learning Objectives

1. Outline the concept of hemoglobin formation within the maturing red cell.
2. Outline the structure and function of hemoglobin
3. Characterize anemia based upon morphological classification
4. Interpret laboratory findings in various anemia to suggest confirmatory test.

LTC-014 Body Fluids & Clinical Chemistry 2(1-1)

Competencies

1- Process appropriate sample for clinical chemistry

Learning objective

- a. Receive samples b. Determine the suitability of the sample c. Verify the identification of the sample
- d. Prepare sample for testing (centrifugation and separation)
- e. Dispatch sample to relevant section
- f. Assign unique identification and register sample
- g. Describe the types of Specimens used in routine clinical chemistry testing
- h. Discuss the underlying principle and limitations of the methods

Competencies

2. Conduct routine Clinical Chemistry testing for electrolyte and acid base balance and renal, gastrointestinal and hepatic function.

Learning Objectives.

- a. Describe the types of Specimens used in routine clinical chemistry testing
- b. Discuss the underlying principle and limitations of the methods

- c. Determine electrolytes, blood gases, urea, creatinine, uric acid, lipase, amylase, alkaline phosphatase gamma GT , ALT, AST, Bilirubin, protein and albumin,
- d. Calculate creatinine clearance
- e .Apply the principles of safe laboratory practice
- f Apply the principles of quality assurance.

Competencies

- 3. Interpret clinical chemistry results for electrolyte and acid base balance and renal, gastrointestinal and liver function

Learning Objectives

- a. State the functions of the kidney, liver, GI tract and pancreas
- b. Relate the main components of the nephron with urine formation
- c. Summarize the pathology of the common kidney diseases of glomerular and tubular origin
- d. State and compare the relative blood level of the major non protein nitrogen compounds
- e. Summarize the source and metabolism of urea, creatine and uric acid
- f. Discuss underline principles limitations and reference range of the routine methods of measuring urea creatine and uric acid in body fluids.
- g. State the clinical significance of measuring urea, of creatine and uric acid
- h. Determine if patient's results are normal using reference interval

Competencies

4. Conduct routine Clinical Chemistry testing for the endocrine and cardiac systems.

Learning Objectives

- a. Describe the types of specimens used in routine clinical testing
- b. Determine test CKMB, LDH, GPT, Troponin T, AST, Thyroid function test , reproductive and adrenal function, test for diabetes
- c. Apply the principles of safe laboratory practice.
- d. Apply the principle of quality assurance
- e. Determine if patient's results are normal using normal reference interval.

LTC-015 Elementary Histopathology and Cytology 2(1-1)

Competencies

1. Apply the principles of microscopy and physical and chemical staining to laboratory analyses

Learning Objectives

1. Define the principles of microscopy
2. Illustrate the use of light microscopy
3. Describe the principles of staining.
4. Differentiate between a physical and a chemical stain

Competencies

2. Prepare cytology specimen for examination

Learning Objectives

1. List the steps in processing of specimen
2. Outline the relevance of recording, labeling and specimen preparation
3. Employ the use of fixation, staining, cleaning and mounting to produce a stained slide.

Competencies

3. Identify and evaluate the morphology of cellular material stained

Learning Objectives

1. Name normal cellular components
2. Identify normal cell
3. Differentiate between normal and abnormal cell.

LTC-016 Elementary Microbiology and Parasitology

4(2-2)

Competencies

1. Acquaint self with the scope of microbiology and microorganisms

Learning objectives

- a. State the accomplishments of the scientific pioneers of microbiology
- b. Describe the three domains and five kingdoms used to classify all living things
- c. Compare prokaryotic cells to eukaryotic cells in regard to nuclear membrane, presence of organelles and mechanism of reproduction, ribosome size and complexity of cell wall
- d. Apply the scientific rules of binomial nomenclature e. Describe the composition and function of the parts of a bacterial cell
- f. Compare the cell wall of the gram positive and gram negative bacteria
- g. Discuss the phases of a typical growth curve
- h. Acquire common terminology used in microbiology

Competencies

2. Analyze methods used to cultivate and identify microorganisms

Learning objectives

- a. Describe the necessary components of serological testing
- b. Discuss the functions of the Gram Stain reagents

- c. Explain the differences between simple, differential and special stains
- d. Explain the difference between acidic and basic dyes
- e. Describe the shapes and arrangements of bacteria
- f. Classify bacteria based on temperature, oxygen, pH requirements and energy/carbon sources
- g. Differentiate between the types of media used to isolate bacteria
- h. Recognize the essential macronutrients required for bacterial growth
- i. Explain the effects of a hypotonic or a hypertonic solution on a bacterial cell
- j. Demonstrate proper safety habits and use of tools in the laboratory
- k. Discuss the criteria used to identify bacteria in the laboratory
- l. Determine identification of bacteria using proper laboratory tests

Competencies

- 3. Compare methods used to control the growth of microorganisms

Learning objectives

- a. List the types of organisms that have a high, moderate and low resistance to physical and chemical methods of growth control
- b. Demonstrate the effectiveness of antibiotics on bacteria
- c. Demonstrate thermal death time for a variety of organisms
- d. Describe the effects of chemicals on bacterial growth

- e. Discuss the practical importance of a growth curve of a bacterial population
- f. Discuss the physical methods used to control the growth of bacteria
- g. Compare different chemical methods used to control the growth of bacteria
- h. Describe the various antimicrobial agents used to control bacterial growth within a host
- i. Discuss factors that affect the death rate of microbes

Competencies

- 4. Examine the methods microorganisms use to cause disease

Learning objectives

- a. Describe bacterial resistance mechanisms that allow bacteria to survive in the presence of antimicrobial agents
- b. Explain the terms relating to the host-parasite relationship of bacteria and humans
- c. Describe the microorganism located on a human host
- d. Discuss the mechanisms of pathogenicity of bacteria

Competencies

5- Investigate the characteristics, habitat and diseases caused by medically significant gram positive organisms

Learning objectives

- a. Employ laboratory methods and bacterial characteristics to identify gram positive bacterial isolates
- b. Describe the diseases caused by medically significant gram positive bacteria such as Staphylococcus aureus, Streptococcus pneumoniae, Enterococcus, Group A and Group B Streptococcus
- c. Name the complications that may occur due to certain gram positive bacterial infections such as Group A Streptococcus
- d. Associate the bacteria responsible for diseases such as diphtheria, food poisoning,

Competencies

6. Investigate the characteristics, habitat and diseases caused by the medically important gram negative organisms

Learning objectives

- a. Discuss the characteristics and diseases caused by Neisseria gonorrhoeae and N. meningitidis
- b. Recognize the organisms responsible and the diseases caused by the enterobacteriaceae c. Describe the symptoms and etiologic agent of whooping cough and Legionnaire's disease
- c. Describe the diseases caused by the curved negative rods such as Campylobacter, Vibrio and Helicobacter
- d. Employ laboratory methods and bacterial characteristics to identify gram negative bacterial isolates

Competencies

7. Examine the characteristics, habitat and diseases caused by unusual microbes

Learning objectives

- : a. Discuss the symptoms of Opportunistic Infections.
- b. Discuss the identification of spirochetes responsible for Lyme disease, relapsing fever and syphilis
- c. Describe the symptoms and organisms responsible for tetanus, gangrene and botulism mycoplasma, chlamydia and rickettsia
- d. Describe the diseases caused by mycoplasma, chlamydia and rickettsia

Competencies

- Investigate the characteristics, practical classification and diseases caused by fungus

Learning objectives

- a. Explain the difference in morphology of yeast and molds
- b. Discuss the growth requirements of fungi
- c. Classify fungi according to the diseases it can produce
- d. List the fungi that are classified as dermatophytes
- e. Describe the symptoms of cutaneous, subcutaneous, and systemic fungal infections
- f. Employ laboratory methods and fungal characteristics to identify fungal isolates

Competencies

- 9. Examine the various kinds of parasites and their associated diseases

Learning objectives

- a. Describe the three classifications of parasites
- b. Describe the four categories of protozoa
- c. State the developmental stages of helminths
- d. Differentiate between a cyst and trophozoite of a protozoan
- e. Discuss the disease, route of transmission and life cycle of parasites such as *Entamoeba histolytica*, *Giardia*, *Trichomonas*, *Trypanosoma*, *Plasmodium*, *Cryptosporidium*, *Toxoplasma*, tapeworm, pinworm, scabies and lice
- f. Employ laboratory methods and morphologic characteristics to identify parasites

Competencies

10. Explore the importance of microorganisms in public health, environment and industry

Learning objectives

- a. Investigate emerging pathogens and current trends in microbiology
- b. Explore scientific web sites on the Internet
- c. Present researched information in an understandable format

LTC-017

Elementary Virology and Immunology

1(1-0)

Competencies

1. Explain the principles involved with antigen and antibodies reaction.

Learning Objectives

1. Discuss the concept of antigens, antibodies structure and function
2. Discuss and differentiate primary and secondary immune response in vivo.
3. Recognize antigen/antibody reactions and their application to immunohematology
4. Explain the principle of agglutination , fixation, precipitation and hemolysis

Competencies

2. Classify ABO and Rh blood group system

Learning Objectives

1. Discuss the theory involved in the performance of ABO testing methods
2. Discuss the importance of the Rh system in compatibility testing

Competencies

3. Investigate the Agglutinin test

Learning Objectives

- a. Discuss the principle and application of the Coombs test

Competencies

4. Determine the safety of blood components for transfusion

Learning Objectives

- a. Discuss the importance of serological testing of blood components prior to transfusion.
- b. Discuss the phases of the compatibility test

Competencies

- 5- Analyze the cells and tissues of the immune system.**

Learning Objectives

- a. Describe the functions of cells and tissues of the immune system
- b. Differentiate between primary and secondary lymphoid organs

LTC-018

Principles of Laboratory Quality Management

1(1-0)

Competencies

1. Discuss the role of quality assurance in the clinical laboratory

Learning objectives

What you will learn as you master the competency:

- a. Explain the importance of quality assurance in the laboratory
- b. Discuss the use of standards and controls to ensure quality
- c. Explain the difference between accuracy and precision

Competencies

2. Discuss laboratory safety rules that must be followed to guard against chemical, physical, and biological hazards.

Learning objectives

What you will learn as you master the competency:

- a. Describe the Occupational Safety and Health Administration (OSHA) safety laws
- b. Discuss classifications of laboratory hazards
- c. State basic rules for laboratory safety
- d. Explain blood-borne Pathogens Standard and the Standard Precautions
- e. Explain exposure control plan

f. Explain the impact of HIV and HBV on safety in the health care setting

Competencies

3. Practice professional and ethical conduct, stress management and interpersonal communication skills

Learning objectives

What you will learn as you master the competency:

- a. Adhere to professional and ethical conduct
- b. Adopt stress management
- c. Maintain interpersonal communication skills

Competencies

4. Assess quality of results using quality control and quality assurance principles

Learning objectives

What you will learn as you master the competency:

- a. Identify potential interfering substances
- b. Assess quality of results using quality control and quality assurance principles

Medical Lab Practicum

Competencies

1. Apply principles of infection control and laboratory safety

Learning objectives

What you will learn as you master the competency:

- a. Practice infection control using isolation techniques and aseptic techniques
- b. Apply methods for disease prevention
- c. Practice laboratory safety using standard precautions
- d. Adhere to the use of personal protective equipment, biohazard waste disposal and the chemical hazards and material safety data sheets

Competencies

2. Practice professional and ethical conduct and interpersonal communication skills

Learning objectives

- a. List personal qualities that are desirable in a medical laboratory professional
- b. Maintain professional and ethical conduct
- c. Practice interpersonal communication

Competencies

3. Perform pre-analytical processes and specimen processing in each laboratory department

Learning objectives

- a. Acquaint self with the use of laboratory equipment including laboratory glassware and microscope
- b. Adhere to infection control and laboratory safety
- c. Perform pre-analytical and specimen processing in basic hematology
- d. Perform pre-analytical and specimen processing in hemostasis: coagulation
- e. Perform pre-analytical and specimen processing in urinalysis
- f. Perform pre-analytical and specimen processing in basic chemistry
- g. Perform pre-analytical and specimen processing in basic microbiology
- h. Perform pre-analytical and specimen processing for blood bank

Competencies

4. Perform initial testing phases using laboratory instrumentation, information systems, and supplies

Learning objectives

What you will learn as you master the competency:

- a. Perform initial testing phases on laboratory specimens in hematology
- b. Perform initial testing phases on laboratory specimens in coagulation
- c. Perform initial testing phases on laboratory specimens in urinalysis

- d. Perform initial testing phases on laboratory specimens in chemistry
- e. Perform initial testing phases on laboratory specimens in microbiology
- f. Perform initial testing phases on laboratory specimens for blood bank

Competencies

- 5. Assess quality of results using quality control and quality assurance principles

Learning objectives

- a. Identify potential interfering substances
- b. Assess quality of results using quality control and quality assurance principles

Competencies

- 6. Document laboratory actions and clerical functions using medico-legal guidelines

Learning objectives

- a. Acquaint self with laboratory actions for documentation
- b. Adhere to protocols, medico-legal guidelines, and correcting entries
- c. Perform clerical functions using protocols and laboratory guidelines
- d. Acquaint self with computer functions such as laboratory information systems and laboratory instrumentation