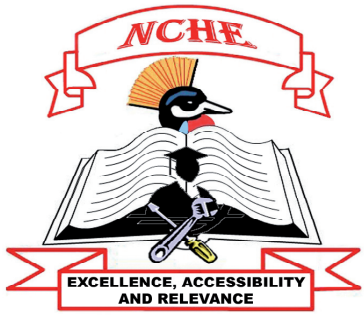
National Council for Higher Education



Minimum Standards for Courses of Study:

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MBChB) PROGRAMME 2007

Edited and printed by:

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Published by ***National Council for Higher Education***

PREFACE

Section 5(i) of Universities and Other Tertiary Institutions Act 2001, requires the National Council for Higher Education "to ensure minimum standards for courses of study." In arriving at minimum standards for courses of study, Council worked with lecturers and professors from universities who recommend to Council what they thought was the minimum body of knowledge for which a degree in a particular programme can be awarded. The operative word is "minimum" and it is at this level that Council has set the standards for these courses of study.

This is done in compliance with the section of the Act quoted above but also fully aware of the objects of the Universities and Other Tertiary Institutions Act 2001, Section 3
"The objects of this Act are to establish and develop a system governing institutions of higher education in order to equate qualifications of the same or similar courses offered by different institutions of higher education while at the same time respecting the autonomy and academic freedom"

Council holds institutional autonomy and academic freedom for universities as sacrosanct. The standards prescribe the body of knowledge below which universities must not teach. The standards leave the universities with the freedom to design their courses based on the minimum standards. The universities are free to add to these minimum course contents to meet their vision, mission and individual uniqueness. When this has been done, universities can then bring their courses and programmes to Council for accreditation. Again the law requires that all courses must be accredited by Council.

Council is grateful to lecturers and professors who have helped in the process of establishing the minimum standards for courses of study.

A.B.K Kasozi
EXECUTIVE DIRECTOR

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2.0 NOMENCLATURE

The successful graduates will be awarded the degree of Bachelor of Medicine and
Bachelor of Surgery (MBChB) of the respective university.

3. 0 DURATION

The duration of the MBChB degree programme shall be a minimum of five years.

4. 0 PHILOSOPHY OF MBChB PROGRAMME

A medical doctor, as a leader or member of a health team, should be competent in areas of patient care and also have other skills, which can be obtained through training carried out in the community in which he/she is going to practice.

The minimum essential competences that a doctor needs to demonstrate at graduation can be grouped under the following twelve broad educational domains:

(a) Scientific Foundation of Medicine
(b) Clinical skills and patient management
(c) Professional Values, Attributes, Behaviour and Ethics
(d) Communication skills
(e) Population Health and Health Systems
(f) Management of Information
(g) Critical thinking and research
(h) Community Skills
(i) Medico-Legal duties

In order to achieve these goals, emphasis should be put, not only on science subjects but also on other subjects such as Sociology, Psychology and Management that are essential to the medical profession.
The training shall take place in a variety of settings that include lecture theatres, clinics, wards, laboratories, operation theatres, family and community settings. In addition to traditional approaches, the training shall also include education innovations that encourage student self-directed learning and resolution of medical tasks and challenges.

5.0 PURPOSES OF THE MINIMUM STANDARDS

The major reasons for setting minimum requirements for the programme include:

(a) Providing a means to the academic community to describe the nature and characteristics of courses in medicine.

(b) Representing general expectations about the standards for the award of MBChB and articulating the attributes and capabilities that those possessing such a qualification should be able to demonstrate
(c) Serving as an important external source of reference for higher education institutions when new programmes are being designed and developed for the MBchB programme
(d) Providing general guidance for articulating the learning outcomes associated with the programme
(e) Providing for variety and flexibility in the design of programmes and encouraging innovations within an agreed overall framework
(f) Enabling the learning outcomes specified for a particular programme to be reviewed and evaluated against agreed general expectations about standards
(g) Serving as one of the external sources of information for academic review and for making judgment about minimum standards being met
(h) Helping the regulatory bodies such as the NCHE, the Medical and Dental Practitioners Council in accrediting medical training institutions in Uganda
(i) Assisting NCHE in ensuring that these minimum standards are maintained and continually improved on by all medical training institutions awarding the MBChB degree.
(j) Guiding in the creation and weighting of specific courses which will be used in designing a credit system that should ease the transfer of students between training institutions and related programmes
(k) Maintaining the quality of medical education in Uganda.
(l) Individual institutions have additional courses in line with their philosophy for instance entrepreneurship

6.0 MINIMUM ADMISSION REQUIREMENTS

6.1 Direct Entry

For admission to the MBChB degree programme under the Direct Entry Scheme,a candidate must have:

- Sat the Uganda Certificate of education examinations (or equivalent) and obtained a certificate in it with five relevant credits.
- Obtained at least two advanced level passes in Biology (or Zoology) and Chemistry taken at the same sitting of the Uganda Advanced Certificate of Education (or equivalent). He/she must also have done Physics or Mathematics and obtained at least a subsidiary pass in it.
- Obtained minimum-weighted points as shall be determined by the Admissions Board of the respective University.

6.2 Mature Age Entry

For admission to the MBChB Programme under the Mature Age Entry Scheme, a candidate must sit and pass the Mature Age Entrance Examinations set and marked by the

respective university. He/she must satisfy all other university requirements for admission to the university under this scheme.

6.3 Diploma Holders Entry Scheme

For admission into the MBChB Programme under the Diploma Holders Entry Scheme, a candidate must have the following:

- A diploma or certificate in a health discipline
- At least one principal A-level pass in related subjects
- Working experience of at least two years in those related fields

Such diploma holders shall include, among others:

(a) Medical Laboratory Technologists
(b) Radiographers
(c) Physiotherapists
(d) Anesthetic Officers
(e) Clinical Officers
(f) Ophthalmic Clinical Officers
(g) Environment Health Officers
(h) Public Health Officers
(i) Public Health Dental Assistants
(j) Public Health Assistants
(k) Dispensers
(l) Psychiatry Clinical Officers
(m) Orthopaedic Officers

6.3.1 Certificate holders

The categories admissible shall also include holders of certificates listed below:

(a) Uganda Registered Nurses Certificate or equivalent
(b) Uganda Registered Midwives Certificate or equivalent
(c) Uganda Comprehensive Nursing Certificate or equivalent

6.4 Degree Holders Entry Scheme

For admission into the MBChB Programme under the Degree Holders Entry Scheme, a candidate must have one of the following:

- A bachelor's degree in relevant science subjects from a recognized University. The applicant should have a CGPA of at least 3.0.
- Students who are transferring from one medical school to another for good reasons will be admissible on transfer of credits.

7.0 LEARNING OBJECTIVES/OUTCOMES OF THE MBChB PROGRAMME

The minimum learning outcomes, which students of medical schools must demonstrate at graduation, come from twelve major domains discussed below. These learning objectives / outcomes shall be achieved by different universities using different approaches depending on their curricula delivery method and, the mission and vision of a given university.

7.1 Scientific Foundation of Medicine

(a) The normal structure and function of the body as a complex of adaptive biological systems.
(b) Molecular, cellular, biochemical and physiological mechanisms that maintain the body's homeostasis.
(c) The human life cycle and effects of growth, development and aging upon the individual, family and community.
(d) Abnormalities in body structure and function, which are caused by diseases.
(e) The etiology and natural history of acute illnesses and chronic diseases.
(f) The normal and abnormal human behavior.
(g) Important determinants and risk factors of health and illnesses and of interaction between humans and their physical and social environment.
(h) Epidemiology, health economics and health management.
(i) The principles of drug action, use and efficacy of various therapies.
(j) Relevant biochemical, pharmacological, surgical, psychological, social and other interventions in acute and chronic illness, in rehabilitation, and end-of-life care.

7.2 Clinical Skills

(a) Take an appropriate history including social issues such as economic, cultural, family, community, residential, and occupational factors.
(b) Perform a thorough physical and mental status examination.
(c) Apply basic cost effective diagnostic and technical procedures, to analyze and interpret findings, and to define the nature of a problem.
(d) Perform appropriate diagnostic and therapeutic strategies with the focus on life-saving procedures and applying principles of best evidence medicine.
(e) Exercise clinical judgment to establish diagnoses and therapies.
(f) Recognize and manage immediate life threatening conditions
(g) Manage the common medical, surgical, obstetric, paediatric and mental health emergencies.
(h) Manage patients in an effective, efficient and ethical manner including health promotion and disease prevention.
(i) Evaluate health problems and advise patients taking into account physical, psychological, social, economic and cultural factors.
(j) Understand the appropriate utilization of teamwork, diagnostic interventions, therapeutic modalities and health care facilities.

7.3 Professional Values, Attitudes, Behaviour and Ethics

(a) Recognition of the essential elements of the medical profession, including moral and ethical principles and legal responsibilities underlying the profession.
(b) Professional values which include excellence, altruism, responsibility, compassion, empathy, accountability, honesty and integrity, and a commitment to scientific methods.
(c) An understanding that each physician has an obligation to promote, protect, and enhance these elements for the benefit of patients, the profession and society at large.
(d) Recognition that good medical practice depends on a mutual understanding and relationship between the doctor, the patient and the family with respect for patient's welfare, cultural diversity, beliefs and autonomy.
(e) An ability to apply the principles of moral reasoning and decision-making to conflicts within and between ethical, legal and professional issues including those raised by economic constraints, commercialization of health care, and scientific advances.
(f) Self-regulation and recognition of the need for continuing professional development, and commitment to life long learning with an awareness of personal limitations including limitations of one's medical knowledge.
(g) Respect for colleagues and other health care professionals and the ability to foster a positive collaborative relationship.
(h) Recognition of the moral obligation to provide end of life care, including palliation.
(i) Recognition of ethical and medical issues in patient documentation: such as plagiarism, confidentiality, privacy, and ownership of intellectual property.
(j) Ability to effectively plan and efficiently manage one's time and activities to cope with uncertainty, and the ability to adapt to change
(k) Personal responsibility and obligation for the care of individual patients.

7.4 Communication Skills

(a) Listen attentively to elicit and synthesize relevant information about all problems and understanding of their content.
(b) Apply communication skills to facilitate understanding with patients and their families and to enable them to make informed decisions as equal partners.
(c) Communicate effectively with colleagues, faculty, the community, other sectors and the media, always maintaining patients' confidentiality and privacy
(d) Interact with other professionals involved in patient care through effective teamwork.
(e) Demonstrate basic skills and positive attitudes towards teaching others.
(f) Demonstrate sensitivity to cultural and personal factors and that improves interactions with patients and the community.
(g) Communicate effectively both orally and in writing.
(h) Create and maintain good medical records.

(i) Synthesize and present information appropriate to the needs of the audience on issues of priority to the individual or community.

7.5 Population Health and Health Systems

(a) Knowledge of important lifestyle, genetic, demographic, environmental, social, economic, psychological, and cultural determinants of health and illness of a population as a whole.
(b) Knowledge of the doctor's role and ability to take appropriate action in disease, injury and accident prevention and protecting, maintaining and promoting the health of individuals, families and community.
(c) Knowledge of international health status, of global trends in morbidity and mortality of diseases of social significance, the impact of migration, trade, and environmental factors on health and the role of international health organizations.
(d) Understanding and acceptance of the roles and responsibilities of other health and health related personnel in providing health care to individuals, populations and communities.
(e) Understanding of the need for collective responsibility for health promoting interventions which requires partnerships with the population served and community leadership, and a multidisciplinary approach including the health care professions as well as intersectoral collaboration.
(f) Understanding of the basics of health systems including policies, organization, financing, cost-containment measures of rising health care costs, and principles of effective management of health care delivery.
(g) Understanding the determinants of equity in access to health care, effectiveness, and quality of care.
(h) Use of national, regional and local surveillance data as well as demography and epidemiology in health decisions.
(i) Willingness to accept leadership when needed and as appropriate in health issues.

7.6. Management of Information

(a) Search, collect, organize and interpret and use health and biomedical information from different databases and sources.
(b) Retrieve and use patient-specific information from a clinical data system.
(c) Use information and communication technology to assist in diagnostic, therapeutic and preventive measures, and for surveillance and monitoring health status.
(d) Understand the application and limitations of information technology.
(e) Maintain records of his/her practice for analysis, accountability and improvement.

7.7 Critical Thinking and Research

(a) Demonstrate a critical approach, constructive criticism, creativity, innovation, and a research-oriented attitude in professional activities.
(b) Understand the power and limitations of the scientific thinking based on information obtained from different sources in establishing the causation, treatment and prevention of disease.
(c) Use personal judgments for analytical and critical problem solving and seek out information rather than wait for it to be given.
(d) Identify, formulate and solve patients' problems using scientific thinking based on information obtained and correlated from different sources.
(e) Understand the roles of complexity, diversity, uncertainty, humility, and probability in decisions in medical practice.
(f) Formulate hypotheses, collect and critically analyse and evaluate data, for the solution of problems.
(g) Share information and knowledge

7.8 Community Skills

(a) Discuss the strategies for community entry and mobilization.
(b) Be able to describe and undertake the process of community diagnosis to identify community priority health problems
(c) Be able to describe the determinants of health problems in the community.
(d) Describe community organization and resources
(e) Describe the organization of health services
(f) Discuss the principles and roles of epidemiology, demography and biostatistics in health care
(g) Discuss the elements of Primary Health Care (PHC)
(h) Discuss Health Management Information System (HMIS).
(i) Describe the major nutritional problems of public health importance
(j) Describe the role of traditional medicine and alternative therapies.
(k) Describe the effects of the environment on individual and community health

7.9 Medico-Legal Duties

(a) Define the doctor's legal and ethical responsibility and obligation towards the patient, the institution and the community.
(b) Identify patients with actual and potential medico-legal issues and manage them appropriately
(c) Perform a medico-legal post-mortem examination
(d) Describe medico-legal documentation tools and procedures
(e) Describe appropriate specimen collection, transportation, storage and examination
(f) Describe the process of gathering, organizing, securing and presenting evidence when testifying in the courts of law.

8.0 ACADEMIC CONTENT

The academic content shall be organized in courses based on three levels of training. Each of these levels shall include knowledge, skill and attitude components. The training institutions will be expected to arrange the teaching of the courses in sequences that meet their curricula and semester / term system requirements.

Level I:
This first level of training is concerned with:

a) Normal structures, functions and values of the body. The required fields of study include Anatomy, Biochemistry and Physiology.
b) Social sciences related to health such as Sociology, Psychology, Ethics, Research, Leadership and Communication Skills.

Level 2:
This phase deals with abnormal structure and function of the body and drugs that are used to restore the body structure and function.

The required fields of study at this level include Microbiology, Pathology and Pharmacology.

Level 3: Clinical and Community Skills

This advanced level of training emphasizes the development of essential skills necessary for good clinical and community practice

The important fields of study are Internal Medicine, Obstetrics and Gynaecology, Paediatrics and Child Health, Surgery, Psychiatry and Public Health and Research

LEVEL 1

1.1 Field of study: Anatomy

Aims: To give students basic knowledge of human anatomy
Teaching and learning methods: Lectures, dissections, tutorials, microscopy sessions, demonstrations
Examination: Written, practical, and oral

Summary of course content

A. Gross Anatomy	**265 CH**	**18 CU**
(i) Upper and lower limbs, thorax	**60 CH**	**4 CU**

- General Introduction to Anatomy

- Osteology of major bones
- Major Joints
- Major Muscles, Nerves, Blood Vessels and Lymphatic Drainage
- The breast
- Chest wall and diaphragm
- Pleura, Pleural Cavity and Lungs
- Mediastinum and its Contents
- Blood Vessels, Autonomic Innervation and Lymphatic. Drainage of Viscera found in the Thoracic Cavity

(ii) Abdomen, Pelvis and Perineum 15 CH 1 CU

- Abdominal Regions and walls
- Inguinal Canal and Hernia
- Peritoneum and Peritoneal Cavity
- Gastrointestinal Tract
- Abdominal organs and glands
- Nerves, Blood vessels and lymphatic drainage
- Bony Pelvis, Pelvic Cavity and Pelvic Diaphragm
- Urogenital Tract and genitalia
- Anal canal, anus and ischiorectal fossa

(iii) Head and Neck 60 CH 4 CU

- Scalp, Face and Neck
- The skull, skull fossae, bony orbit and contents
- Fascia, spaces, muscles and bones
- The ear
- Temporomandibular Joint
- Oro-naso-pharyngeal cavity, larynx and trachea; sinuses
- Cervical oesophagus
- Blood Vessels, Autonomic Innervation and Lymphatic drainage of structures in head and neck
- Glands in the head and neck

(iv) Neuroanatomy 60 CH 4 CU

- The Central Nervous System (CNS)
- Meninges, Ventricles and Cerebrospinal Fluid (CSF)
- The Brain, Spinal cord and Pituitary gland
- Blood Supply & Venous Drainage of the Brain
- Cranial Nerves
- Special Sensory Organ Pathways
- Autonomic Nervous System

B. Histology and Cytology 30 CH 2 CU

- Introduction and Methods used to study Histology
- The Cell and Cytogenetics

- General connective tissues, Lymphoid tissue and organs
- Heart and Blood Vessels
- Respiratory Tract and Lungs
- Gastro-intestinal tract and accessory glands
- Urinary System
- Genital organs
- Integumentary system
- Endocrine system
- Neurohistology

C. Human Embryology and Teratology 15 CH 1 CU

- Introduction and definition of terms
- Cell Division
- Germatogenesis
- Uterine Cycle
- Fertilization, Cleavage and Implantation
- Twinning
- Second Week of Development
- Third Week of Development
- Germ layers and their derivatives
- Development of systems and anomalies
- Development of glands and anomalies
- Foetal Circulation and Changes at Birth
- The thoraco-abdominal diaphragm and its anomalies
- Development of the Head and Neck
- Neuroembryology

Recommended textbooks/Reference materials

The reading materials include but are not limited to:

1. Cunningham's Manual of Practical Anatomy, Volume 1, 2 and 3: By *G.J. Romanes*
2. Clinically Oriented Anatomy – 4th Edition. By: *K.L. Moore and A.F.*
3. Dalley. (Book has accompanying CD-ROM)
4. Clinical Anatomy – 7th Edition. By: *R.S. Snell* (Book has accompanying
5. CD-ROM)
6. Grant's Atlas of Anatomy – 11th Edition. By: *A.M.R. Agur* and *A.F. Dalley*
7. Grants Methods of Anatomy by *John V. Basmajjan*
8. Last's Anatomy – 8th Edition. By: *R.M.H. McMinn*
9. Gray's Anatomy – 39th Edition (Book has accompanying CD-ROMs)
10. Core Text of Neuroanatomy – 4th Edition. By: *M. B. Carpenter*
11. Clinical Neuroanatomy by *Richard S. Snell*
12. Several web sites exist depending on the topic of interest
13. A Textbook of Histology – 12th Edition. By *D.W. Fawcett*
14. Histology – A Text and Atlas – 2nd Edition. By: *M.H. Ross* and *L.J. Romrell*
15. Wheater's Functional Histology – 4th Edition. By: *B. Young* and *J.W. Heath* (Book with accompanying CD-ROM)

16. Histology and Cell Biology – An Introduction to Pathology. By: *A.L. Kierszenbaum*
17. Atlas of Functional Histology. By: *J.B. Kerr*
18. Functional Histology: By *H. George Burkitt* et. al.
19. Essentials of Human Embryology. By: *W.J. Larsen*
20. The Developing Human – Clinically Oriented Embryology – 6th Edition. By: *K.L. Moore* and *T.V.N. Persaud*
21. Langman's Medical Embryology – 9th Edition. By: *T.W. Sadler* (Book has accompanying Simbryo CD-ROM)
22. Langman's Essential Medical Embryology. By: *T.W. Sadler*

These need to be updated annually

8.2 Field of study: Biochemistry

Aims:

- To enable students understand structures of molecules, role of enzymes in metabolism and the normal function of the body
- To learn about chemical and molecular mechanisms underlying functions of the body; metabolic and regulatory processes, and mechanisms governing inheritance in molecules
- Learn about lipids and proteins, and regulation of metabolism and diseases related to this.

Teaching and learning methods: Lectures, tutorials, practical sessions, group discussion and problem based learning.

Examination: Written, practical, and oral

Summary of Course Content	**210 CH**	**14 CU**

- **Introduction to biochemistry I** — **60 CH** — **4 CU**
  - Organic and physical chemistry, functional groups and their properties, acid/base theory, solutions, colligative properties, structure and function of major biomolecules.
- **Structural Biochemistry**
  - Structures and functions of amino acids, proteins, carbohydrates, lipids, nucleotides and nucleic acids.
- **Enzymology Structure**
  - Characteristics, properties and function of enzymes in metabolism in a normal functioning body.

- **Principles of molecular biology and mechanisms that govern inheritance in molecules.**
  - Molecular genetics
  - Basic molecular genetics,
  - Replication, transcription
  - Protein synthesis
- **Immunology**
  - The immune system: what it is and what it does; molecular immunology.
  - Development and, organization of the immune system.
  - Immunization, immunodeficiency, biochemistry of HIV.
  - Molecular aspects of cancer.

I Biochemistry I **60 CH** **4 CU**

- **Metabolism of carbohydrate, fats, and amino acids**
  - Energy changes in cellular reactions
  - Electron transfer, anabolism, catabolism, respiratory quotient and dynamic action of food.
  - Pathways of synthesis and degradation of carbohydrates: include glycolysis, citric acid cycle, electron transport chain, gluconeogenesis, glycogen metabolism, and pentose phosphate pathway.

- **Regulation of carbohydrate metabolism and related diseases**
  - Synthesis and breakdown of fatty acids, triacylglycerol, and ketone bodies, metabolism of ethanol, eicosanoids, phospholipids, glycosphingolipids, cholesterol and its utilization, bile acids and plasma lipoproteins.
  - Regulation of metabolism related disorders such as ketosis, respiratory distress syndrome, lipidoses, atherosclerosis, coronary heart disease, cholestasis, hyperlipidimias.
  - Protein and amino acid metabolism (break down of dietary protein, and transport of amino acids, synthesis of non essential amino acids and catabolism of individual amino acids.
  - Urea synthesis, hyperammonaemia, hepatic encephalopathy, in born errors of metabolism. Biomolecules, nucleotide metabolism and disorders
  - Introduction to basic biochemical techniques used in clinical biochemistry to diagnose disease.

- **Biochemistry II** **30 CH** **2 CU**
- **Integration of metabolism**
  - General relation between lipids, carbohydrates and nitrogen compounds metabolism
  - Hormonal regulation of fuel metabolism; metabolism in starvation, diabetes mellitus and physical exercise
- **Endocrinology**
  - Classification of hormones, synthesis, functions and endocrine disorders
  - Metabolism of diabetes mellitus and Cushing's syndrome

- **Biochemical aspects of blood**
  - Plasma proteins, their functions.
  - Inherited disorders of haemoglobin structure and synthesis
  - Sickle cell anaemia and thalassemias
- **Nutrition and Nutrition Disorders**
  - Nutrition requirements in human diet
  - Metabolism of vitamins and minerals
  - Nutrition disorders: under nutrition and over nutrition (overweight and obesity)

Practical biochemistry **120 PH, 60 CH** **4 CU**

Practicals I
Colour reactions of carbohydrates
Colour reactions of amino acids and proteins
Separation methods
Factors affecting enzyme ativity

Practicals II
Carbohydrate metabolism
Determination of blood glucose

Practicals III
Assessment of protein status
Measurement of serum/plasma urea
Testing urine for ketones

Practicals IV
Measurement of serum creatinine
Measurement of serum bilirubin

Reading list
The reading list needs to be updated annually and includes but not limited to:

1. *Solomons T.W.G.*, (1981). Organic Chemistry.(2nd Ed).Wiley NewYork (USA).
2. *McKee T., McKee J R.*, (1996) Biochemistry. Wm. C. Brown publishers NY (USA).
3. *Stryer L.* (1988). Biochemistry (3rd Ed.). W.H. Freeman and Company San Francisco (USA).
4. *Lehninger A.L.,Nelson D.L., Cox M.M* (1987) Principles Of Biochemistry. (1st Ed.). Worth Publishers. New York.
5. *Campbell P.N., Smith A.D.,* (1988). Biochemistry Illustrated(2nd Edition). Churchill Livingstone. Edinburgh.
6. *Murry R.K, Granner D.K, Mayes P.A, Rodwel V.W* (1993). Harper's Biochemistry (23rd edition) Appleton & Lange. USA
7. *Voet D.,Voet J G,.(*1995) Biochemistry(2nd Ed.) John Wiley and Sons. New York (USA).
8. *Roitt I., Brostoff J., Male D.,* (1995). Immunology (2nd ED.) Churchill Livingstone. Edinburgh

8.3 Field of Study: Physiology

Aims:

- To integrate the knowledge of function at molecular, cellular, tissue and organ in level order to understand how different organ systems work and interact
- To give a basis for understanding the prevention, diagnosis and treatment of disease

Teaching methods: Lectures, practicals, seminars, tutorials, problem based learning
Examination: Written, orals, practical.

Summary of course content	**265 CH**	**18 CU**
● **General Physiological Principles**	**75 CH**	**5 CU**

Introduction to physiology
Haemostatsis
The Cell
Body water and important biological ions
Trans membrane transport
Electrical properties of the cell membrane
The neurone
Nerve conduction
Synapse and synaptic transmission
Muscle

- **Body fluids and compartments**
  - Blood, lymph, CSF, joint, pleural, pericardial, peritoneal fluid
  - Compartments – extra cellular, intracellular compartments
- **Blood**
  - Introduction
  - Formation of blood
  - Structure and function of the red blood cells
  - Iron metabolism
  - Anaemia
  - Jaundice
  - White blood cells
  - Haemostasis
  - Blood coagulation
  - Blood groups
  - Blood transfusion

- **Respiratory system**
  - Structure and function of the lungs
  - Mechanism of respiration
  - Ventilation and lung volumes

- Pulmonary blood flow
- Diffusion of gases
- Ventilation perfusion relationships
- Transport of gases
- Control of respiration
- Respiration in an unusual environment (eg high altitude, space, deep water etc
- Pulmonary function tests
- Respiratory failure

- **Cardiovascular system** **75 CH** **5 CU**
  - Introduction
  - The heart
  - Cardiac cycle
  - ECG
  - Haemodynamics
  - Cardiac output
  - Peripheral circulation and its regulation
  - Regulation of arterial blood pressure
  - Microcirculation
  - Lymphatic system
  - Cerebral circulation
  - Coronary circulation
  - Circulation in skeletal muscle
  - Cutaneous circulation
  - Circulatory response to posture, exercise gravity, and increased intrathorathic pressure
  - Circulatory shock
  - Congestive cardiac failure
- **Renal physiology**
  - Introduction
  - Functional anatomy
  - Renal circulation
  - Glomerular filtration
  - Tubular function
  - Water excretion
  - Acidification of urine and bicarbonate
  - Acid base homeostasis
  - Regulation and excretion of potassium, sodium and chloride
  - Diuretics
  - Effects of disorders on renal function
  - Renin, angiotensin and aldosterone system
  - Renal erythropoetic factor
  - Gluconeogenesis
  - Vitamin D3 activation
  - Regulation of extracellular fluid composition and volume

- **Gastrointestinal physiology**
  - Relevant physiological anatomy
  - GIT hormones
  - Motility
  - The Liver,
  - Secretions,
  - Digestion,
  - Absorption

- **Temperature regulation** **45 CH** **3 CU**

  - Heat production, body temperature
  - Heat loss, production, and controls
  - Thermoregulation mechanism
  - Thermo reception afferent transmission, integration, efferent transmission and effector correction measures
  - Thermoregulation in the newborn
  - Adaptation in thermoregulation
  - Pathophysiology of thermoregulation

- **Metabolism, energy balance and nutrition**
  - Energy metabolism
  - Intermediary metabolism
  - Carbohydrate metabolism
  - Protein
  - Fat
  - Metabolic acidosis
  - Metabolic alkalosis
  - Nutrition

- **Endocrinology and reproduction**
  - Introduction
  - Haemostasis
  - Endocrine functions of the hypothalamus,
  - glucose haemostatsis
  - pituitary hormones
  - thyroid and parathyroid hormones
  - adrenal gland
  - male and female reproductive physiology
  - pregnancy and lactation

- **Aging Physiology**
  - Hormonal function
    - Thyroid

- Pituitary
- Parathyroid
- Pancreas
- Adrenals
- Gonads
- Catecholamines

- **Sports Physiology**

- **Neural Physiology** **75 CH** **5 CU**
  - Overview of the nervous system
  - Review of the nerve and muscle physiology
  - Receptor cell physiology
  - General sensory physiology
  - Physiology of smell
  - Physiology of hearing
  - Physiology of taste
  - Physiology of vision
  - Physiology of pain

- **Motor system**
  - Introduction
  - Definition and mechanism
  - Definition and mechanism of posture
  - Equilibrium and movement
  - Neuronal excitation connections
  - Cerebral cortex
  - Brain stem
  - Basal ganglia
  - Cerebellum
  - Vestibule
  - Spinal cord
  - Regulation
  - Control of equilibrium, posture and movement

- **Autonomic nervous system**
  - Introduction
  - Sympathetic and parasympathetic system
  - Control/regulation

- **Limbic system**
  - Hypothalamus
  - Reticular activating system
  - Learning and memory
  - Speech, language and cerebral dominance
  - Clinical and laboratory assessment of nervous system function

Reading resources

1. Medical Physiology by *A.Guyton*
2. Review of Medical Physiology by *Gannong*
3. Samson's Wright Applied Physioloy by *Cyril A Kelly, Eric Niel, Norman Joels*
4. Medical Physiology by *Sanders*

8.4. Field of Study: Sociology and Anthropology

Aim: To introduce students to basic concepts in sociology as related to health and illness.
Teaching methods: lectures, tutorials, self-directed learning, and seminars
Examination: Written

Summary of course content	**60 CH**	**4 CU**

Sociology	**30 CH**	**2 CU**

Factors responsible for social change
The effect of social change on health
Gender specific health issues
Social inequalities in health
Social structure and health/disease patterns.
Behaviour related to disease and health
Attitudes, sick-role behaviour, self-care, health seeking behaviour, health promotion.
Doctor-patient relationship.
The family
People and work
Social problems

Anthropology	**30CH**	**2 CU**

Aim: To introduce students to basic concepts of origin of the human race, development, customs and beliefs and how they relate to prevention and management of ill health
Teaching methods: lectures, tutorials, self-directed learning, community exposure
Examinations: Written and oral

Summary of course content

- Antiquities and the concept of race
- Classification of races
- Origin of life
- Origin and development of *Homosapiens*
- Social institutions
- The concept of culture and beliefs
- Indigenous healing
- Faith healing
- Medicinal knowledge including herbal medicine

Reading resources

1. Readings in contemporary sociological theory by *Englewood Cliffs (published by NJ Prentice Hall)*

8.5. Field of Study: Psychology

Aim: To prepare the student for subsequent clinical courses and to understand the relationship between the patient and the physician; and to contribute to the personal and professional development of the student.

Teaching methods: Lectures, seminars, workshops, tutorials, and self directed learning

Examination: Written

Summary of course content **60 CH** **4 CU**

- Concepts of social psychology
- Human behaviour in disease.
- Abnormal behaviour
- Human learning
- Intelligence
- Memory
- Motivation
- Sexuality and Gender role
- Personality
- Human development
- Death and the dying process
- Introduction of psychopathology: Suicide and parasuicide.
- Application of clinical health psychology

Reading resources

1. Human behaviour: an introduction for medical students by *Alan Stoudemire* (Published by Lippincott-Raven)

8.6. Field of Study: Basic Communication and Computer skills

Aims:

1. To explain the essential elements of communication.
2. To describe good interpersonal communication skills
3. To describe ability to use available resource centers e.g. Library, internet,

Teaching methods: Lectures, tutorials and practicals

Examination: Written

Summary of course content **30 CH** **2 CU**

Interviewing skills
Diversity in communication
Gathering information

- Books
- Journals
- Online databases
- Electronic resources
- Newspapers
- Resource persons

Basic computer skills

- Introduction to computers
- Description of computer parts
- Basic typing skills

File management

- Search features
- Backup

User policy

The Internet, Health link and Telemedicine.
Online resources:

- Email
- Internet
- www
- Giving information

Basic communication skills

- Verbal communication skills
  - Listening
  - Comprehending
- Non-verbal communication
  - Posture, body movements & expressions
  - Eye contact
  - Attitude

Difficult information
Communication in groups
Presentation and writing skills

Reading resources

1. Communication skills for medicine by *M. Lloyd R. Bor* (Churchill Livingstone)

LEVEL II

8.7. Field of Study: Microbiology

Aims:

- To provide adequate knowledge in general microbiology, immunology, bacteriology, parasitology, arthropodology, virology and mycology useful in future clinical study and the medical profession.

- To explain the basic concepts and principles of laboratory medicine and laboratory management of disease.
- To describe and explain immune mediated disorders of the body
- To describe the principles of immunology
- To describe the principles of disinfections and sterilization
- To describe the taxonomy and characteristics of bacteria, viruses, and fungi
- To describe the distribution of normal flora.

Methods of teaching: Lectures, tutorials, demonstration of microscopic findings, problem based learning and practical sessions

Examination: Written, oral, practical including exposure to patients

Summary of course content: **165 CH**

- **General microbiology** **60 CH** **4 CU**

- Introduction to Microbiology
- Microorganisms and disease
- Anatomy of bacteria
- Pathogenicity and Virulence
- Bacterial classification
- Bacterial physiology,
- Cultivation and microbial metabolism
- Microbial genetics
- Sterilisation and disinfection
- Handling of equipment and cross infection control
- Antibiotics and antimicrobial agents
- Bacterial morphology and staining

- **Immunology** **75 CH** **5 CU**

- Innate and acquired immunity
- Antigens and antibodies
- The immune response
- Vaccines
- The complement system
- The immunopathology
- Immunodeficincy disorders
- The major histocompatibility complex
- Graft rejection mechanisms
- Serological tests

- **Bacteriology**

- Normal microbial flora:
- Carrier state, symbiosis, commensalism, mutualism, parasitism,
- Staphylococci
- Neisseria species
- Enterobacteriacae

- Non-fermentative gram negative bacilli.
- Pavobacteria Gram negative rods
- Mycobacterium.
- The spirochaetes
- Chlamydia
- Mycoplasma and cell defective bacteria
- Rikettsia.

- **Parasitology**
  - General introduction to the study of medical parasitology.
  - Protoza
  - Nematodes
  - Trematodes
  - Cestodes

- **Arthropodology**
  - Introduction: arthropod and human disease
  - Crustacea group (copepods, crabs crayfish)
  - Arachnida scabies mites
  - Ticks
  - Insecta group: Fleas, lice, bugs
  - Flies

- **Virology** **30 CH** **2 CU**
  - Introduction to Virology and viruses.
  - Orthomyxoviruses
  - Paramyxoviruses (measles, mumps SRV)
  - Rubella virus and carnonoviruses
  - Rabies and other viral diseases of the nervous system.
  - Arthropodborne and rodent borne viral diseases.
  - Encephalitis viruses,
  - Hemorhagic fevers
  - Picorna viruses: Enteroviruses (ECHO, Coxsackie and Rhinoviruses)
  - Hepatitis viruses,
  - Rotavirus

Retroviruses and Lentiviruses

- Herpes virus group
- Poxviruses
- Human cancer viruses (Oncogenic viruses) and warts.

Mycology

- Tinea
- Thrush
- Subcutaneous mycoses
- Systemic mycoses

8.8 Field of Study: Pathology

Aims: To provide an adequate basic knowledge of pathology useful in future clinical study and the medical profession.

Teaching methods: Lectures demonstration of macroscopic and histopathological findings. Practical training in autopsy and histopathology. Demonstration of gross pathology and fine needle aspiration.

Examination: Written, oral and practical.

Summary of course content: 150 CH 10 CU

- **General Pathology and Histopathology 60 CH 4 CU**
  - Introduction to Pathology
  - Cell injury, Necrosis, Apoptosis
  - Cellular adaptation, growth and differentiation
  - Inflammation
  - Tissue repair, regeneration and wound healing
  - Disturbances of Body fluids, Haemostasis and blood flow
  - Infarction
  - Genetic disorder
  - Diseases of the immune function,
  - Acquired Immunodeficiency Syndrome
  - Categories of infectious agents
  - Infectious diseases
  - Amyloidosis
  - Carcinogenesis and Neoplasia

- **Chemical Pathology 30 CH 2 CU**
  - Introduction to chemical pathology
  - Diabetes Mellitus
  - Acid Base Disorders
  - Fluid and Electrolyte Balance
  - Enzymology
  - In born Errors of Metabolism (Inherited Metabolic Disorders)
  - Endocrine Diseases

- **Systemic Pathology 60 CH 4 CU**
  - Respiratory system
  - Cardiovascular system
  - Gastro-intestinal tract
  - Endocrine system
  - Haematological disorders
  - Genetic Disorders
  - Genito-urinary system
  - Musculo-skeletal and nervous system
  - Central and peripheral nervous system

Reading resources

1. Muir's textbook of pathology ISBN 0-7131-4458-0
2. General pathology by *Walter Isreal*

8.9 Field of Study: Medical ethics 45 CH 3 CU

Aims:

1. To discuss the principles of biomedical ethics
2. To discuss professionalism in medical practice
3. To discuss the doctor-patient relationship
4. To discuss issues involved in the informed consent process
5. To discuss confidentiality in medical practice.

Etiquette of Health Professional

1. To discuss the etiquette of health care professions
2. To explain appropriate behavior.
3. To explain appropriate hospitality skills
4. To explain the essential elements of communication.
5. To discuss competitiveness of the medical industry.

Rights and Responsibilities of patients and providers

1. To discuss consumer rights
2. To describe the skills of soliciting information from the patient
3. To discuss the acceptable attitude in clientele handling
4. To describe ethical considerations in patient's management
5. To describe human rights, health rights, patient rights, rights of a provider and the responsibilities of a provider/patient.

Teaching methods: Lectures, tutorials, case discussion
Examination: Written and oral

Content outline:
Ethics

1. Principles of biomedical ethics
   a. Autonomy-
      - Informed consent
      - Right of privacy
      - Right to basic minimum of health care
      - Confidentiality
   b. Beneficence
      - Aims at benefiting others (patients)
   c. Non-malificiency- do no harm
   d. Justice- equity and fair distribution of both risks, benefits and inadequate health care resources.
2. Professionalism

- Definition of a profession
- Roles of a professional
- Duties of a professional
- Professional relationship with colleagues and others

3. Doctor-patient relationship
   - Communication
   - Duties

Health Professional Education

Different learning methods

Principles of different learning methods

- Students directed learning
- Lectures
- Laboratories, and practical sessions
- Tutorials and their processes
- Role of lecturers
- Role of the tutor
- Role of the student

Etiquette of Health Professional

- Rules of formal relations
- Rules for polite behavior among patients. Comparison of health care industry with service standards of other industries like banks, hotels, airlines and others.
- Medical office protocol: privacy, dress code
- Proper handling of the phone conservation & utilization dialogue
- Pleasant front desk experience, manners
- Handling patient complaints
  - No advertisements
  - No canvassing or touting for patients
  - Stationery bears only basic information
  - Don't prescribe on prescription forms with pharmacists name and address
  - Don't pay commission to any person for recommending patients
  - Don't share fees with any person who has not taken part in the service for which those fees are charged
- Don't charge or receive fees for services not personally rendered
- Don't practice with unqualified people
- Dress properly
- No sexual relationship with patients, caregivers or guardians
- Don't assist any person in any illegal practice or conduct
- Don't take over a patient from another practitioner without informing the practitioner who was originally in charge of the case
- Don't impede a patient or someone acting on behalf of the patient from obtaining the opinion of another practitioner or from being treated by another practitioner
- Don't unjustifiably cast doubt on the probity or professional reputation or skill of another practitioner

- **Essential elements of communication: 7 steps**
- **Open the discussion**
  - Introduction
  - Patient opening
  - Agenda setting (Procedure to follow)
- **Build a relationship /Rapport**
  - Listening
  - Empathy and attitude
  - Nonverbal behavior
- **Gather information**
  - History – The patient's story
  - Questions – Establishing facts
  - Organization and transitions
  - Physical examination
  - Personal privacy/confidentiality issues
- **Understand the patient's perspective**
  - Patient concerns
  - Patient beliefs and preferences & expectations
  - Patient's expression of feelings
  - Specific circumstances & influences
- **Share information**
  - Vocabulary/language
  - Patient understanding of illness
  - Clinician explanation
  - Information quality and format

- **Reach agreement/Contract**
  - Treatment planning – methods, drugs, outcome (expected) side effects, drawbacks
  - Treatment plan implementation (roles & responsibilities)
- **Conclude**
  - Conclusion (ending a meeting or termination of a therapeutic relationship)

Rights and Responsibilities of patients and providers

Consumer Rights

i) Individual patient respect
ii) Equity in treatment
iii) Optimum treatment (best under circumstances)
iv) The right to adequate information
v) Treatment options (self determination)
vi) Privacy
vii) Participation and representation
viii) Redness/grievances
ix) The right to die in dignity
x) Receive or decline spiritual and moral comfort

History taking

i) Courtesy
ii) Dress code, presentation
iii) Use of simple language
iv) Effective communication skills

Acceptable Attitude: Tone, distance expressions

Respect, Empathy, Non-discrimination, Non-judgmental, avoid counter transference, Avoid personal emotions in decision-making – do not make it personal.

Introduction to principles of Bio-ethics

- Institutional review committee
- Protection of rights of study subjects
- Informed consent
- Follow guidelines for acceptable ethical practice in research

Professionalism

- Doctor-patient relationship
- Confidentiality and privacy
- Duties of the Uganda Medical and Dental Practitioners Council
- Functions of the Medical Practitioner in Society
- Human rights issues
- Disclosure of information regarding patients
  - With permission from the patient
  - Consent of guardian or next of kin in case of mentally disadvantaged, unconscious or deceased
  - To protect the public
  - Advance greater good of the community

Clinical practice

- Update one's Skills and knowledge
- Maintain adequate standards of equipment and hygiene
- Appropriate assessment of patients including follow up
- Referral
- Accurate and current patients' records

What medical practitioners should not do:

- Perform professional act for which practitioner is not adequately qualified or sufficiently experienced
- Perform a professional act under improper conditions or inappropriate surroundings
- Perform unnecessary procedures for personal gain
- Act violently or indecently towards a patent, colleagues or the general public
- Issue false medical reports
- Deny emergency treatment to a patient

Causes of serious professional misconduct

- Neglecting a patient
- Criminal abortion
- Alcohol abuse
- Drug addiction
- Sexual relation with a patient, patients' relatives, guardians or caregivers
- Advertisement
- Covering unqualified person
- Giving false certificates
- Falsification of claims for services not rendered
- Breach of confidentiality

Reading resources

The reading list needs to be updated annually and includes but not limited to:

1. Ethics by *A. Odonga Marianum Press(U)*
2. Principles of Bioethics, by *Beauchamp TL, Childress J* Oxford University Press
3. Clinical Ethics by *Jonsen RA*

8.10 Field of Study: Pharmacology and Therapeutics

Aim: To provide adequate knowledge of Pharmacology and Therapeutics for future clinical study and the medical profession.

Teaching methods: Lectures, tutorials, problem based learning, and laboratory experiments.

Examination: written and oral.

Summary of course content: 165 CH 11 CU

Basic principles of pharmacology and autonomic nervous system pharmacology 45 CH 3 CU

- Introduction to Pharmacology.
- Pharmacokinetic Principles
- Introduction to Drug receptors and Pharmacodynamics
- Modes of drug action,
- Special features of drug actions: selectivity, idiosyncrasy, addiction, tolerance and physical dependence on drugs.
- Drug interactions
- Basic and Clinical Evaluation of new Drugs
- Autonomic nervous system Pharmacology
- Histamine, 5-Hydroxytryptamine (5-HT), Ergot Alkaloids
- Eicosanoids
- Vasoactive Peptides; and Nitric oxide.

- **Systemic pharmacology** **45 CH** **3 CU**
  - Cardiovascular Pharmacology:
  - Renal Pharmacology
  - Gastrointestinal tract
  - Endocrine Pharmacology
  - Respiratory System
  - Musculoskeletal and Integumentary System
  - Drugs and the blood
- **Chemotherapy, cytotoxic agents and immunopharmacology** **45 CH** **3 CU**
  - Antimicrobial agents
  - Cancer Chemotherapy
  - Immunopharmacology
- **Central nervous system pharmacology, therapeutics & toxicology** **30 CH** **2 CU**
  - Central Nervous System Pharmacology:
  - Ophtalmic pharmacology
  - Principles of toxicology
  - Pharmacotherapeutics
  - Miscellenous topics
  - Therapeutic Seminars – Clinical Correlations Conferences on selected Topics.

Reading resources

1. Pharmacology ISBN 0443 o59748
2. Katzung and Trevor' Pharmacology
3. *Rang, Dale, Ritter* and *Moore*: Pharmacology. Churchill Livingstone

LEVEL III: CLINICAL AND COMMUNITY SKILLS

8.11 Field of Study: Internal Medicine

Duration of study: The course should be offered in two levels:
1. Junior clerkship which should last a minimum of 7.5 weeks
2. Senior Clerkship which should last a minimum of 7.5 weeks

Aim: At the end of this course the student should be:
- Able to perform a physical examination and write a case history
- Understand the pathophysioloy on internal diseases
- Understand and interpret laboratory investigations
- Diagnose and treat common internal diseases
- Know about less common diseases and their treatment
- Perform resuscitation and treat anaphylaxis

- Write prescriptions and referrals
- Meet and communicate with patients and their relatives
- Function in a health care organization and as a leader

Teaching methods: supervised practical work on medical wards and outpatient clinics, emergency rooms and the community; seminars, lectures, tutorials, problem based learning.

Examinations: written, clinical, oral.

Summary course content (Theory: Junior and Senior Clerkships)

210 CH 14 CU

- **Infections:**
  - Introduction to infections and immune responses
  - Bacterial infections and septicaemia
  - Malaria
  - Other protozoal infections
  - Helminths
  - Fungal infections
  - Viral infections
  - Acute fevers
  - Chronic fevers
  - Tuberculosis
  - Leprosy
- **HIV medicine**
  - Introduction to HIV medicine
  - Immunology of HIV
  - Staging of HIV disease
  - Drug therapy in HIV
  - HIV and CVS/respiratory system
  - HIV and neurology
  - HIV and the genitourinary system
  - HIV and the GIT
  - HIV related malignancies
  - Counseling and prevention of HIV
- **Gastroenterology**
  - Introduction to the GI system
  - Swallowing disorders
  - Reflux and peptic ulcer disease
  - GI bleeding
  - Diarrhoea
  - Inflammatory bowel disease
  - Malabsorptions
  - Tumours of the GIT
  - Appendicitis

- **Nutrition, liver and pancreatic diseases**
  - Diet and health
  - Vitamin and mineral deficiencies
  - Protein and energy malnutrition
  - Jaundice and liver investigations
  - Hepatitis
  - Chronic liver disease
  - Liver failure
  - Biliary disease
  - Pancreatic disease
- **Haematology**
  - Microcytic and macrocytic anaemia
  - Hemolytic anemia
  - Anaemia of chronic infection
  - Bleeding disorders
  - Blood transfusion
  - Haematological malignancies
  - Bone marrow failure and pancytopenia
  - Myeloproliferative disorders
- **Cardiology**
  - Hypertension
  - Pathophysioloy of cardiac failure
  - Investigations and management of cardiac failure
  - Valvular heart disease
  - Infective endoacarditis
  - Ischaemic heart disease
  - ECG
  - Arrhythmias
  - Pericardial disease
  - Cardiomyopathies including EMF
- **Respiratory disease**
  - Introduction to pulmonary physiology
  - Bacterial pneumonia
  - Suppuritive lung disease
  - Pleural disease
  - Viral pneumonia
  - Asthma
  - Acute respiratory distress syndrome and pneumonitis
  - Fungal lung disease
  - Pulmonary fibrosis
  - Occupational lung disease
  - Lung tumours
  - Pulmonary vascular disease
  - Pulmonary embolism
  - Chronic Obstrutive Pulmonary Disease (COPD)

- **Dermatology**
  - Eczema
  - Psoriasis
  - Itchthyosis
  - Purpura urticaria
  - Scabies
  - Fungal infection
  - Bacterial infection
  - Malignancy
  - Leucoplakia
  - Skin odour
- **Clinical chemistry**
  - Sodium
  - Potassium
  - Calcium/Phosphorus
  - Magnesium
  - Acid base
  - Bone disease
  - Liver and lipids
  - Glucose
  - Proteins
  - Immunoglobulins and their importance
  - Laboratory data interpretation
- **Endocrinology**
  - Introduction
  - Diabetes type I
  - Diabetes type II
  - Thyroid and parathyroid disease
  - Pituitary/Hypothalamic disease
  - Adrenal disease
  - Endocrine emergencies
  - Metabolic syndrome
- **Nephrology**
  - Overview of renal physiology and disease
  - Acute renal failure
  - Chronic renal failure
  - Nephrotic syndrome
  - Obstructive renal disease and infections
  - Glomerulonephritis and vasculitis
  - Systemic disease and the kidney
  - Renal emergencies and dialysis
- **Rheumatology**
  - Introduction to Rheumatology
  - Seropositive arthritidies
  - Seronegative arthititidies

- SLE and autoimmuno arthropathies
- Infections and inflammation of bone and joints including osteoartritis
- Crystal arthropathies
- Osteoporosis and osteomalacia
- Connective tissue disease

- **Genito-urinary and environmental medicine**
  - Introdutcion to STI
  - Syndromic management
  - Genital discharge (gonorrhoea, vaginosis, etc)
  - Genital ulcers (chancroid, Herpes genitalis simplex, etc)
  - Syphilis
  - Candidiasis
  - Poisoning I (orgoposphates)
  - Poisoning II (others)
  - Drowning and hypothermia
  - Medical complications of burns and rhabdomyolysis
  - Insect bites
  - Snake bites
- **Neurology**
  - Neuroanatomy
  - Cerebral vascular disease
  - Cerebellar disease
  - Dementia
  - Demyelinating disorders
  - Basal ganglia disorders
  - Space Occupying lesions
  - Spinal cord disease
  - Meningitis and encephalitis
  - Seizures and epilepsy
  - Acute confusion
  - Peripheral neuropathy
  - Myopathy
- **Oncology**
  - General overview
  - Solid tumours
  - HIV related tumours
  - Leukemia
  - Lymphomas
  - Myeloma
  - Chemotherapy and complications
  - Neutropenic sepsis
  - Oncology emegencies
  - Palliative care

- **Clinical skills (Junior and Senior Clerkships) 195 CH 13 CU**
  - History taking
  - Physical examination
  - Interpretation of laboratory and imaging results
  - Communication and Customer care

Reading Resources

The reading list needs to be updated annually and includes but not limited to:

1. Hutchison's Clinical Methods
2. Davidson's Principles and Practice of Medicine

8.12 Field of Study: Obstetrics and Gynaecology

Duration of study: The course should be offered in two levels:

1. Junior clerkship which should last a minimum of 7.5 weeks.
2. Senior Clerkship which should last a minimum of 7.5 weeks.

Aims: To acquire sufficient obstetric and gynaecology knowledge, skills, positive attitude and experience to be able to make a correct diagnosis and institute appropriate management.

Teaching methods: supervised practical work on obstetric and gynaecological wards, outpatient clinics, emergency rooms and the community; seminars, lectures, tutorials, problem based learning.

Examinations: written, clinical, oral

Summary of course content (Theory) 180 CH 12 CU

- **Anatomy and Physiology**
  - Anatomy and development of female genital tract.
  - Physiology of the reproduction.
  - Physiological changes during pregnancy.
  - Development of the embryo
- **Antepartum care**
  - Diagnosis of pregnancy, obstetrics examination and seminology
  - Development of the fetus and antepartum survellance
  - Antenatal care
  - Gestational trophoblastic disease
  - Abortion
  - Ectopic pregnancy
  - Multiple gestation
- **Obstetrics common complications**
  - Anaemia
  - Malaria in pregnancy
  - Diabetes mellitus
  - Hypertensive disorder in pregnancy
  - Premature labour, PRROM

- Intrauterine growth restriction
- Post maturity
- Antepartum haemorrhage (APH)
- UTI and renal disease in pregnancy
- HIV/AIDS infection, PMTCT

- **Normal labour and delivery**
  - Normal labour
  - Spontaneous delivery
- **Abnormal labour and delivery**
  - Malposition and Malpresentation
  - Obstructed labour
  - Induction and augmentation
  - Ruptured uterus
  - Caeserean section and vacuum extraction
  - Postpartum haemorrhage
- **Purperum**
  - Normal purperum
  - Lactation and breast feeding
  - Abnormality during purperum
  - Family planning
  - The new born infant assessment

- **Clinical skills (Junior and Senior Clerkships) 120 CH 8 CU**
  - History taking
  - Physical examination
  - Interpretation of laboratory and imaging results
- **Gynaecology**
  - Premenstral syndrome and Menstral disorders
  - STI and PID
  - Dysfunctional Uterine Bleeding
  - Family planning
  - Endometriosis
  - Infertility: female and male factor
  - Fistulae in obstetrics and gynaecology
  - Benign conditions of genital organs
  - Surgical gynaecological conditions
  - Oncological gynaecology
  - Climateric and Menopause
- **Clinical skills (Junior and Senior Clerkships) 150 CH 10 CU**
  - History taking
  - Physical examination
  - Interpretation of laboratory and imaging results
  - Communication and Customer care

Reading resources

The reading list needs to be updated annually and includes but not limited to:

1. Obstetrics by Ten Teachers
2. Gynaecology by Ten Teachers

8.13 Field of Study: Paediatrics and Child Health

Duration of study: The course should be offered in two levels:

1. Junior clerkship which should last a minimum of 7.5 weeks
2. Senior Clerkship which should last a minimum of 7.5 weeks

Summary of course content (Theory: Junior and Senior Clerkships)

120 CH **8 CU**

Aim: To equip the students with knowledge and skills so that they can carry out cost effective clinical, promotive and preventive pediatric and child health work. They should be able to handle common medical, surgical, psychiatric pediatric problems and recognize cases that need immediate attention also identify disease, behavioural problems and learning disorders of childhood and adolescence.

Teaching methods: Tutorials, lectures, practical sessions on the wards {examination, evaluation, and follow up of patients, clinical rounds}problem based learning, case based seminars, case presentations, information retrieval to solve clinical problems, laboratories, out patients and emergency units. The student is expected to participate in supervised patient management.

Examination: Written, oral, clinical

- **The child in society**
  - Growing up in a developing country
  - The Rights of the child
  - Millennium development goals and child health
  - Social trends and effect on child health
  - Services for children with special needs
- **Genetics**
  - Chromosomes and Chromosomal Abnormalities
  - Common Autosomal Abnormalities
  - Common Sex Chromosome Abnormalities
  - Single Gene (Mendelian) Inheritance
  - Recent Advances in molecular Genetics
  - Genetic Counselling
- **Fetus**
  - Periconceptional Medicine
  - The Placenta
  - Examination of the Fetus
  - Drugs Which Cross the Placenta

- Fetal Transplacental Infections
- Infections Acquired During Vaginal Delivery
- Maternal Immunoglobulins
- Teratogenicity

- **Newborn**
  - Routine Examination and assessment of the Newborn
  - Birth Injuries
  - Transition to Independent Life
  - Size at Birth
  - Prematurity
  - Respiratory Problems in the Newborn
  - Jaundice in the Newborn
  - Gastrointestinal Problems
  - Neural Tube Anomalies
  - Cleft Lip and Palate
  - Neonatal Infections
  - Neonatal seizures
- **Nutrition**
  - Anthropometry
  - Breastfeeding
  - Artificial Feeding
  - Feeding Problems
  - Specific Nutritional Deficiencies
  - Malnutrition
  - Failure to thrive
- **Paediatric HIV**
  - Introduction
  - Epidemiology, Pathogenesis, and Natural History
  - Preventing Paediatric HIV Infection
  - Approach to Care of HIV-exposed or HIV-Infected Child
  - Diagnosis and Clinical Staging of HIV Infection
  - Common Clinical Conditions Associated with HIV
  - Pulmonary Conditions
  - Antiretroviral Therapy
  - Adolescent Issues
  - Long-Term and Terminal Care Planning for Children Affected by HIV/AIDS and their Families
  - Counselling, Psychosocial Support
  - Nutrition and HIV
- **Other infections**
  - Immune Deficiency
  - Tuberculosis
  - Immunisation
  - Malaria
  - Measles

- Rebella
- Mumps
- Chicken Pox (Varicella)
- Herpes Simplex Infections
- Glandular Fever
- Hand, Foot and Mouth Disease
- Hepatitis A
- Hepatitis B
- Poliomyelitis
- Diphtheria
- Pertussis (Whooping Cough)
- Fungal infections
- Rickettsial infections

- **Hazards**
  - Injuries
  - Burns
  - Drowning/Near Drowning
  - Choking and Suffocation
  - Poisoning
  - Environmental Hazards

- **Airways and lungs**
  - Upper Respiratory Tract Infection
  - Stridor
  - Inhaled Foreign Body
  - Acute Lower Respiratory Infection
  - Suppurative lung disease
  - Asthma
- **Heart**
  - Acyanotic Lesions with a Left to Right Shunt
  - Atrial Septal Defect (Ostium Secundum)
  - Atrial Septal Defect (Ostium Primum)
  - Ventricular Septal Defect
  - Patent Ductus Arteriosus
  - Pulmonary Hypertension
  - Obstructive Lesions
  - Aortic Stenosis
  - Coarctation of the Aorta
  - Hypoplastic Left Heart
  - Pulmonary Stenosis
  - Cyanotic Heart Disease
  - Tetralogy of Fallot
  - Transposition of the Great Arteries
  - The ECG
  - Cardiac Arrhythmias

- Infective Endocarditis
- Rheumatic Fever
- Hypertension
- Cardiomyopathies including Endomyocardial fibrosis (EMF)

- **Gut**
  - Acute Abdominal Pain
  - Recurrent Abdominal Pain
  - Diarrhoea and vomiting
  - Persistent Diarrhoea
  - Intestinal Parasites
  - Constipation
  - Liver Disease
  - Pancreatic disease
  - Appendicitis
  - Intussusception
- **Urinary tract and testes**
  - Renal Function Tests
  - Urinary Tract Malformations
  - Renal Calculi
  - Urinary Tract Infections
  - Enuresis
  - Haematuria
  - Acute Glomeluronephritis
  - Nephrotic Syndrome
  - Renal Tabular Disorders
  - Acute Renal Failure
  - Chronic Renal Failure
  - Testes
  - Prepuce
- **Blood**
  - Iron Deficiency Anaemia
  - Aplastic Anaemia
  - Haemolytic Anaemias
  - Disorders of Haemoglobin Synthesis
  - Bleeding Disorders
  - Other anaemias
- **Oncology**
  - The Management of Children with Cancer
  - Acute Leukaemia
  - Lymphomas including Burkitt's lymphoma
  - Kaposi sarcoma
  - Brain and Spinal Tumours
  - Neuroblastoma
  - Soft Tissue Sarcomas
  - Renal Tumours
  - Germ Cell Tumours

- Bone Tumours
- Retinoblastoma
- Other Tumours
- Palliative care

- **Growth**
  - Head Growth
  - Height and Weight
  - Short Stature
  - Excessive Height
- **Metabolic problems**
  - Inborn errors of metabolism
  - Hypoglycaemia
  - Other
- **Endocrinology**
  - Puberty
  - Disorders of Sexual Differentiation
  - Adrenal Glands
  - Thyroid
  - Parathyroid Glands
  - Diabetes mellitus
- **Skin**
  - Rashes of Early Infancy
  - Atopic Eczema
  - Infections and Infestations
  - Congenital Skin Lesions
  - Other Common Skin Disorders
- **Bones and joints**
  - Arthritis
  - Osteomyelitis
  - Normal Postural Variations
  - Scoliosis
  - Hip Disorders
  - Knee Disorders
  - Talipes (Clubfoot)
  - Genetic Bone and Joint Disorders
  - Bone Tumours and related disorders
- **Nervous system and muscles**
  - Introduction
  - Cerebral Palsy
  - Headache
  - Seizures and epilepsy
  - Ataxia
  - Intracranial Infection
  - Neuromuscular Disorders
  - Poliomyelitis
  - Movement disorders

- **Sight, hearing, speech and learning**
  - Sight
  - Hearing
  - Speech
  - Learning
- **Emotions and behaviour**
  - Introduction
  - Brain Disorders
  - Mental retardation
  - Development Delay Problems
  - Psychosocial aspects of development and disease in childhood and adolescence
  - The Interaction Between the Child and the environment
  - Behavioural Problems
  - Emotional Disorders
  - Maltreatment of Children
  - Substance abuse
  - Eating disorders
  - Conversion disorder
  - Attention deficit disorder

- **Child survival strategies**
  - Immunization
  - Growth monitoring
  - Breast-feeding
  - Integrated management of childhood illnesses (IMCI)
  - Food supplements
- **Emergency paediatrics**
  - Cardiopulmonary resuscitation and basic paediatric life support
  - Birth asphyxia and neonatal resuscitation
  - Convulsions and status epilepticus
  - The comatose child
  - Principles of management of accidental poisoning in children
  - Acute asthma
  - Croup and larygotracheobronchitis
  - Shock
  - Diabetic ketoacidosis
  - Heart arrhythmias and cardiac failure
  - Dehydration

- **Clinical paediatrics (Junior and Senior Clerkships)**

150 CH **10 CU**

This involves practice in talking professionally to children and parents and in examining children of all ages

- History taking in Paediatrics and Child Health
- General examination

- Developmental assessment
- Examination of systems
- Examination of the newborn baby
- Interpretation of laboratory and imaging results
- Communication and Customer care

Reading resources

The reading list needs to be updated annually and includes but not limited to:

1. Essential Paediatrics by *David Hull* and *Derek I Johnston*, Churchill Livingstone, ISBN 0 443 05959 4.
2. International Child Health Care by *David Southall, Brian Coulter, Christiane Ronald* and *Simon Parke,* BMJ Publishers ISBN 0 7279 1476-6.
3. Paediatrics- Understanding Child Health . *Tony Watwerston, HP Helms* and *Ward Platt,* Oxford University Press, ISBN 0 19 262564 0.
4. Handbook on Pediatric AIDS in Africa (edited by *D. Tindyebwa, Janet Kayita, P Musoke, Brian Elley, Ruth Nduati, Hoosen Coovadia, Raziya BObart, Dorothy Mbori* Ngacha, Mary Pat Kieffer on behalf on ANECCA, the African Network for the Care on Children affected by AIDS).

8.14 Field of study: Surgery

Duration of study: The course should be offered in two levels:

1. Junior clerkship which should last a minimum of 7.5 weeks
2. Senior Clerkship which should last a minimum of 7.5 weeks

Aims: To acquire sufficient surgical knowledge, skills, positive attitude and experience to be able to make a correct diagnosis and institute appropriate management

Teaching methods: Tutorials, lectures, practical sessions in the operation theatres, wards, outpatient departments, and emergency units {examination, evaluation, and follow up of patients, clinical rounds,}, problem based learning, case based seminars, case presentations, information retrieval to solve clinical problems, laboratories. The student is expected to participate in supervised patient management.

Examinations: Written, oral, clinical

Summary of courses (Theory, Junior and Senior Clerkships)

150 CH **10 CU**

- **General principles**
  - Wound healing and management
  - Nutrition
  - Preparing a patient for surgery
  - Sterilization and theatre safety
  - Post operative care

- Fluid and electrolyte balance
- Blood transfusion
- Acute life support and critical care
- Wound Infection
- Tetanus
- Parasitic infections
- Acquired Immunodeficiency Syndrome
- Cysts, ulcers, and sinuses
- Day surgery
- Burns
- Surgical Ethics
- Palliative Care
- Principles of oncology
- Clinical evaluation
- Multiple injuries
- Diabetes mellitus
- Hypertension
- Surgical instruments

- **GIT**
  - Peptic ulcerations
  - Pancreatic disease
  - Diseases of the biliary tract
  - Liver disease
  - Obstructive jaundice
  - Intestinal obstruction
  - Appendicitis
  - Abdominal injuries
  - Peritonitis
  - Benign conditions of the ano-rectal region
  - Gastrocolic fistulae
  - Intestinal fitulae
  - Herniae
  - Carcinoma of the esophagus
  - Carcinoma of the stomach
  - Hepatocellular carcinoma
  - Colorectal tumours
  - Splenic disease
  - Inflammatory bowel disease
- **Plastic surgery**
  - Wounds and scars
  - Reconstructive surgery
  - Burns
  - Cosmetic surgery
  - Congenital abnormalities
  - Tumours of the skin

- **Orthopaedics and Trauma**
  - General principles of management of fractures
  - Injuries of the pelvis, upper and lower limbs
  - Injuries of the hip, shoulder, knee, wrist, ankle
  - Injuries of the spine and spinal cord
  - Head injuries
  - Acute and chronic infections of bones and joints
  - Congenital lesions of the limbs
  - Connective tissue tumours
  - Low back pain
- **Endocrine**
  - Goitre
  - Thyroid cancer
  - Benign and malignant conditions of the breast
  - Benign and malignant conditions of the adrenal gland
  - Testicular conditions
  - Tortion
  - Infection
  - Hydrocele
  - Congenital
  - Tumours
  - Cysts
  - Vascular
  - Injury
- **Cardiothoracic surgery**
  - Chest injuries
  - Diseases of the pleura and mediastinum
  - Hiatus hernia
  - Gastroesophageal reflux
  - Lung tumours
  - Valvular heart disease
  - Congenital heart disease
  - Diseases of the thoracic aorta
  - Pericarditis
  - Heart transplant
  - Vascular disorders
  - Lymphoedema
- **Neurosurgery**
  - Head injuries
  - Spinal injuries
  - Peripheral nerve injuries
  - Intracranial abscess
  - Hydrocephalus
  - Intracranial haemorrhage
  - Congenital abnormalities of the spinal cord
  - Tumours of the brain and meninges

- **Urology**
  - Investigations of the genitourinary urinary tract
  - Congenital disorders of the genitourinary tract
  - Urinary tract infections
  - Injuries of the kidney, ureters, urinary bladder and urethra
  - Urethral stricture
  - Tumors of the genitourinary tract
  - Benign enlargement of the prostate
  - Male infertility
  - Circumcision
- **Anaesthesia**
  - Preoperative evaluation of patients
  - Preparation of patients for operation
  - General anaesthesia
  - Local-regional anaesthesia
  - Monitoring
  - Equipment
  - History of anaesthesia
  - Fluid therapy
  - Emergencies
  - Medical conditions and anaesthesia
  - Pain management
  - Resuscitation and intensive care
  - Airway management
  - Anaesthetic techniques
- **ENT**
  - Introduction
  - Clinical evaluation and investigations
  - Trauma
  - Epistaxis
  - Infections
  - Tumours
  - Foreign bodies
  - Emergencies
  - Voice disorders
  - Hearing disorders
  - Cerumen
- **Ophthalmology**
  - Anatomy and physiology pf the eye
  - Periobital and orbital swelling
  - Injuries of the eye and adjacent structures
  - Acute red eye
  - Painless loss of vision
  - Congenital disorders
  - Proptosis

- Strabismus
- Ocular examination
- Refractive errors
- Ocular tumours
- Diseases of the lens, choroid, retina, lachrymal system
- HIV and the eye

- **Paediatric surgery**
  - Introduction
  - Paediatric trauma
  - Inguinal scrotal disorders
  - Umbilical hernia
  - Abnormalities of the penis
  - Circumcision
  - Pyloric stenosis
  - Intestinal obstruction
  - Acute abdominal pain
  - Urinary tract infections
  - Constipation
  - Congenital malformation
  - Necrotizing enterocolitis
  - Oncology
- **Oral surgery**
  - Maxillofacial injuries
  - Diseases of the oral mucosa
  - Disorders of the salivary glands
  - Congenital anomalies
- **Clinical skills (Junior and Senior Clerkships and Surgical Specials)**
  270 CH 18 CU
  - History taking
  - Physical examination
  - Interpretation of laboratory and imaging results
  - Communication and Customer care

Reading resources:

The reading list needs to be updated annually and includes but not limited to:

1. Textbook of Surgery by *Bailey and Love*
2. Davey's companion to surgery in Africa
3. Outlines of Orthopaedics by *Crawford Adams*
4. Primary Surgery by *Maurice King* and *Peter Bewes*
5. Emergency Surgery by *Hamilton Bailey*
6. Principles and Practice of Surgery by *Forrester* and *Carter and Macleod*

8.15 Field of Study: Public Health

Aims: To acquire sufficient knowledge in epidemiology, biostatistics, research methods, demography, control of communicable diseases, environmental sanitation, MCH, nutrition, occupational health, and health service management

Teaching methods: Lectures, seminars, group discussions, community-based education, problem based learning, practical

Examination: written, oral, practical

Summary of content **225 CH** **15 CU**

- **Introduction** **60 CH** **4 CU**
  - History of public health
  - Primary Health Care
  - National and international organizations involved in public health
  - Public health legislation
  - Disasters
  - Refugees and internally displaced people
- **Epidemiology**
  - Introduction
  - Methods and procedures of community diagnosis
  - Disease Transmission and Control
  - Epidemiological methods
  - Disease surveillance
  - Epidemiology of HIV, malaria, TB, diarrhoeal disease
- **Biostatistics**
  - Introduction
  - Data Sources and collection methods
  - Summarizing, presenting/communicating data
  - Interpretation of Data, Statistical Inference
- **Demography**
  - Introduction
  - Population size and composition
  - Demographic processes
  - Relationship between population and development

- **Control of communicable diseases** **60 CH** **4 CU**
  - Introduction
  - Types of communicable diseases
  - Prevention and Control
- **Control of major non-communicable diseases**
  - Trauma
  - Cardiovascular disease
  - Diabetes
  - Cancer

- **Environmental sanitation**
  - Introduction
  - Environmental health problems
  - Environmental health measures
- **Research methods**
  - Introduction - types of research
  - Research approaches
  - Study design, sampling procedures
  - Data collection, analysis and report
- **Integrated Management of Childhood Illness (IMCI)**
  - Introduction
  - Assessment of the Sick Young Child (2 month – 5 Years)
  - The Sick Young Infant (1 week – 2 months)
  - Community IMCI
  - **Community placement: Community Based Education and Service**

75 CH **5 CU**

- **Maternal and child health**
  - Introduction to Maternal health
  - Antenatal, Delivery and Post-natal care
  - Child Health
  - Organization of MCH Services
- **Nutrition**
  - Introduction
  - Food and Diets
  - Social Aspects of Nutrition
  - Economic factors
  - Nutritional Metabolism
- **Occupational health**
  - Introduction
  - Occupational Health services
  - Work environment

- **Health service management** **30 CH** **5 CU**

  - Introduction
  - Policy and Organization of Health Services
  - Core management functions
  - Planning and evaluation of health services
  - Financial and human resource management

Reading materials

1. *Jekel JF*. Epidemiology, Biostatistics and Preventive Medicine. WB Sanders Company, New Haven, Connecticut 1996
2. *Alderson M*. An Introduction to Epidemiology. Macmillan Press 1983

3. Introduction to demography by *Kpedepko*
4. *Holland WW, Detels R, Knox G*. Oxford Textbook of Public Health. 2nd Edition Volume 2. Methods of Public Health. Oxford University Press, Oxford, 1991.
5. *Sofoluwe GO, Schram R, Ogunmekan DA*. Principles and Practice of Public Health in Africa, University Press PLC, Ibadan 1996.
6. *Ukoli FMA*. Prevention and Control of Parasitic Diseases in Tropical Africa. The Main Issues. University Press PLC, Ibadan 1992.
7. *Riegelman RK, Hirsch RP*. Studying a Study and Testing a Test. Little Brown and Company, Boston, 1989.
8. Ugandan MOH. Health Sub-Districts in Uganda. Concept Paper Draft III, Jan 1999
9. Ugandan MOH. The Health Sector Strategic Plan (HSSP), Kampala, June 2000.
10. Ugandan MOH/HPD. Manual for HSD Planning and Implementation. Kampala, January 2000.
11. *Amondo-Lartson R et al*. District Health Care: Challenges for Planning Organization and Evaluation in Developing Countries. ELBS MacMillan, 1991.
12. *McMahon R et at al.* On Being in Charge. A Guide to Management in Primary Health Care. WHO, Geneva 1992.

8.16 Field of Study: Psychiatry (5 weeks)

Aim: The students should be able to recognize, diagnose, manage and refer patients with psychiatric disorders

Teaching methods: Problem based leaning, lectures, tutorials, grand rounds, seminars, bed side, case presentation (need to see psychiatry in general practice]

Examinations: Written, oral, clinical

Summary of content (Theory) 105 CH 7 CU

- Anxiety
- Depression
- Alcohol and other substance abuse
- Unexplained physical symptoms
- Stress related disorders
- Psychiatric manifestations of physical conditions /disorders
  - HIV
  - Malaria
  - Typhoid
  - Liver disease
  - Head injury
  - Surgery e.g amputation

- Affective disorders
- Chronic psychosis
- Epilepsy

- Emergencies
  - Suicide
  - Mass trauma
  - Acute excitement
  - Child abuse
  - Dangerous behaviour

Emotional and behavioural disorders in children and adolescents
Psychosocial problems

Reading materials

The reading list needs to be updated annually and includes but not limited to:

1. African Textbook of Psychiatry and Mental Health. Ed. *David Ndetei*

9.0 EVALUATION STRATEGIES

Student assessment is important because it is a means by which a learner is judged to have achieved what was intended. It is also useful for certification and for improving the curriculum.

The evaluation instrument during and at the end of the courses / programme should be designed in such a way that they measure the intended outcomes.

The technique should be reliable, valid, practicable and fair and should be used in combination to measure the outcomes.

In medicine, a variety of techniques may be used, including, but not limited to:

- Essay questions
- Structured short questions
- Long cases
- Short cases
- Viva voce
- Practical examinations
- OSCE / OSPE
- Multiple choice questions (MCQ)

The training institution will be required to show that they are using multiple techniques for evaluation.

The intra-programme evaluation should contribute 30-40% of the final evaluation.

The pass mark at the summative evaluation will be 50%. The institution will indicate how the final scores are graded.

10.0 RESOURCE REQUIREMENTS FOR TEACHING AND LEARNING IN MBChB PROGRAMME.

Adequate resource allocation is a sine-qua-non to the success of academic programmes, hence the centrality of adequate provisions.

1. Academic staff

There is absolute need to maintain a minimum staff / student ratio of 1:10 This means increasing the existing number and quality of staff in the medical schools through training, re-training, and academic staff exchange programmes between universities.

2. Non-academic staff
3. Departments
   (a) Every Department of a medical school should have at least:
   - Professors
   - Associate professors
   - Senior Lecturers
   - Lecturers
   - Administrative and other staff

   (b) Each academic department should have a minimum of three academic staff at the level of Senior Lecture or above. The minimum qualification of Lecturers, Senior Lecturers, Associate professors and Professors should be a Master's degree.

4. Academic physical facilities
   Physical spaces: Lecture rooms, libraries, laboratories, wards and clinics, theatres and the community.
   Adequate sitting facilities, lighting, lecture boards should be provided.

5. Libraries, IT-Based Resources and appropriate writing materials and texts as well as learning packs.

Equipment

- Computers and Internet facilities
- Television
- Power Point Projectors
- Video
- Audio tape recorders
- Public address systems
- Magic Boards

PH = Practical Hours
CH = Contact Hours
CU = Credit Units