

INTER-UNIVERSITY COUNCIL FOR EAST AFRICA



BENCHMARKS FOR MEDICINE AND DENTISTRY PROGRAMMES

DECEMBER 2017

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Acronyms

BDS	Bachelor of Dental Surgery
CATS	Credit Accumulation and Transfer System
DAAD	German Academic Exchange Services
DDS	Doctor of Dental Surgery
DIES	Dialogue on Innovative Higher Education Strategies
EAC	East African Community
ECTS	European Credit Transfer System
EQF	European Qualifications Framework
HEIs	Higher Education Institutions
HRK	German Rectors Conference
IUCEA	Inter-University Council for East Africa
MBChB	Bachelor of Medicine and Bachelor of Surgery
MD	Doctor of Medicine
NQF	National Qualifications Framework
NRAs	Higher Education National Regulatory Agencies
QA	Quality Assurance
QAA	Quality Assurance Agency for Higher Education, UK
RQFU	Regional Qualifications Framework for Universities
TCU	Tanzanian Commission for Universities

Foreword

The Inter-University Council for East Africa (IUCEA) is a strategic institution of the East African Community (EAC) responsible for the development and coordination of higher education and research in the region. The EAC considers higher education as critical for the attainment of socio-economic development and regional integration. As such, after having been recognised as the surviving institution of the former Community responsible for coordinating the networking of university institutions in the region, IUCEA has assumed a broader role as a building block for the achievement of sustainable socio-economic development and regional integration. In that regard, the mission of IUCEA now focuses on the promotion of strategic and sustainable development of higher education systems and research for supporting East Africa's socio-economic development and regional integration. The IUCEA has set its vision to become a strategic institution of the East African Community responsible for promoting, developing and coordinating human resources development and research in the region.

Hence, in 2006 IUCEA initiated a process aimed at harmonising regional quality assurance by establishing A common East African quality assurance framework, regional quality assurance office at the IUCEA Secretariat, and setting regional higher education benchmarks quality standards based on internationally recognised frameworks. The process would also prepare a user-friendly quality assurance handbook based on existing national benchmarks and systems, and streamline national and institutional quality assurance systems according to the local perspectives with the aim of promoting international competitiveness of universities in East Africa.

The initiative also focused on capacity building through providing appropriate training on the implementation of the quality assurance system to staff in universities and national commissions and councils for higher education in the Partner States. It is linked to the establishment of a regional qualifications framework. It was anticipated that the regional qualifications framework would facilitate harmonization of education and training systems, and qualifications thereby clearly indicating the programme learning outcomes, the different qualification levels, credit system and recognition of prior learning, among others. Therefore, the framework would easily facilitate mutual recognition of qualifications across the region as envisioned in the EAC Common

Market Protocol. All these interventions contributed significantly in transforming East African Community into a Common Higher Education Area, a Declaration that was made by the 18th Summit of the EAC Heads of State on 20th May 2017.

In developing the regional quality assurance system in higher education in East Africa, IUCEA in collaboration with the German Academic Exchange Service (DAAD) and the Germany Rectors' Conference (HRK) within the framework of their joint Higher Education Management support programme referred to as "Dialogue on Innovative Higher Education Strategies (DIES)", started to work on this initiative through a consultative process involving various stakeholders of higher education in the region. The process involved a number of consultative meetings and workshops at country and regional level, aimed at building consensus and mapping out a strategy on how to establish a regional quality assurance framework. This included the development of an operational tool in the form of a Quality Assurance Handbook. The consultative forums were also aimed at ensuring that all performance indicators and quality benchmarks were agreed upon and owned by all end-user institutions. Additionally, IUCEA intended to develop specific subjects benchmarks as part of the tools for harmonization purposed academic programmes taught in higher education institutions in the region in addition to the development of *The Handbook A Roadmap to Quality*. The first benchmarks, formulated were Benchmarks for Bachelor of Business Related Studies. The second set of benchmarks were for the Bachelor of Computer Science and Bachelor of Information Technology and subsequently, the Benchmarks for Education Programmes. The current publication contains Benchmarks for the degree in Medicine (MD/MBChB) and degree in Dental Surgery (DDS/BDS).

On behalf of the IUCEA secretariat, it is my sincere hope and expectation that the higher education fraternity in the region will make use of these benchmarks in all educational processes and world of work to ensure that our programmes are relevant and of expected quality.

**Prof. Alexandre Lyambabaje,
IUCEA, Executive Secretary**

Kampala, December 2017

Acknowledgements

I wish to extend my sincere appreciations to several individuals representing various higher education institutions, stakeholders and partners for their invaluable contributions in the development of these benchmarks. I wish to particularly express my gratitude to the technical and editorial team, which was drawn from the regional round table stakeholders' forum for finalising the document to its final state. Thus, Prof. Otsyula Barasa of Moi University, Kenya, Dr. Albert Nzayisenga, Rwanda Medical and Dental Council, Rwanda, Prof. Joel Okullo Odom, Uganda Medical and Dental Practitioners Council, Prof. Janet Rutale of Medical Council of Tanganyika, Tanzania, and Dr. Jean Baptiste Ngomirakiza of University of Burundi, Burundi for their outstanding contribution in the final editorial work of this benchmark document. The various individuals representing IUCEA members and some representatives of employers, the list of which is appended to this document are highly appreciated for their contribution. On the same note, their respective institutions are sincerely acknowledged for granting permission to their staff to participate in this process. I wish to extend my sincere appreciation to Dr. Cosam Chawanga Joseph (Chief Principal Quality Assurance and Qualifications Framework Officer) and Ms. Juru Marie Eglantine (Senior Quality Assurance and Standards Officer) of IUCEA for their invaluable contribution and support to this process.

The National Commissions/Councils of Higher Education of the EAC Partner States are highly acknowledged for their instrumental contribution in spearheading and coordinating the processes in the development of these benchmarks in their respective countries. The staff representing these institutions to this process are sincerely appreciated for their dedications and inputs to this exercise.

It is my expectation that these benchmarks will provide an important building block of harmonisation of education as part of operationalisation of the East Africa Community Common Higher education Area and therefore all stakeholders will use them in the various intended purposes such as curriculum development and review, assessing graduates competencies, and comparability, among others.

**Prof. Alexandre Lyambabaje,
IUCEA, Executive Secretary**

Kampala, December 2017

Preamble

The benchmarks for degree in Medicine (MD/MBChB) and degree in Dental Surgery (DDS/BDS) contained herein have been developed as one of the set milestones for the development of an East African Quality Assurance System that is being operationalised as one of the regional strategies for harmonisation of higher education system, within the EAC integration agenda. The system constitutes the framework of the East African Common Higher Education Area. Benchmarks for the degree in Medicine and a degree in Dental Surgery have been developed in full consciousness that the programmes are different and therefore a need for harmonisation of these programmes.

As highlighted in the foreword, the benchmarks are aimed at providing an important process of harmonisation of the training for the degree of Doctor of Medicine and degree of Doctor of Dental Surgery and should be beneficial to all the players in higher education sub-sector. Thus, the main objective of benchmarking is to provide a baseline for comparability of the degree of Doctor of Medicine and degree of Doctor of Dental Surgery and their graduates within and outside the East Africa by harmonising practice in the region. However, the benchmarks do not constitute a checklist for programme curriculum developers. They are to be used as a yardstick or a point of reference, and not as absolute standards.

This document has been structured into 3 parts.

- **Part 1** is the introduction. It presents the background, objectives and the justification. It also articulates the development process of the benchmarks and how they were formulated.
- **Part 2** is on the use of the benchmarks. It shows the relation between the benchmarks and the Regional Qualifications Frameworks, the Curriculum and the link with Quality Assurance.
- **Part 3.** presents the benchmarks for the Medicine programme and Dental surgery programme.

PART 1: INTRODUCTION

1.1 Background

One of the mandates of the IUCEA is to maintain high and comparable academic standards in higher education recognized regionally and internationally. IUCEA is mandated to put special emphasis on the promotion of Quality Assurance (QA) and Quality Management. In that regard, IUCEA aspires to operate within the expectations of stakeholders to deliver services that enhance and harness QA in the region. In East Africa, the notion of QA in higher education is an issue of great concern among all stakeholders, including policy makers, parents, employers, and students. A number of factors have contributed to this phenomenon. East Africa has experienced rapid expansion of the number and enrollment levels in higher learning institutions in recent times. This has been triggered by the exponential increase in demand for access to higher education in each of the countries in the region.

As a result, the IUCEA is obliged to ensure that the rapid expansion of higher education in the region does not compromise the quality of education being delivered. Furthermore, in recent years, student mobility within East Africa has increased tremendously, necessitating the need to institute mechanisms for comparability of the quality of education in universities in East Africa. It is important to note that education has become a tradable commodity across borders and hence there have been efforts to institute international safeguards that would ensure maintenance of international quality standards. These efforts are being implemented within regional and international QA frameworks. The development of benchmarks therefore becomes a necessity.

The Medicine and Dentistry Programmes benchmarks are the fourth in a series that began with the Bachelor of Business Studies¹, followed by benchmarks for the Bachelor of Computer Science and the Bachelor of Information Technology and Bachelor of Education offered². These subjects' benchmarks were developed by IUCEA with the collaboration and support of the German Academic Exchange Services (DAAD) under the IUCEA/DAAD QA Initiative. For sustainability, IUCEA committed to continue with

1 IUCEA *Benchmarks for Bachelor of Business related studies*, June 2013

2 IUCEA *Benchmarks for the Bachelor of Computer Science and the Bachelor of Information Technology Programmes*, March 2015

the process beyond the initiative. In this regard, the Benchmarks for the Medicine and Dentistry programmes have been developed by IUCEA by involving subjects and QA experts and representatives of National Commissions and councils for higher education of the EAC Partner States.

1.2 Objectives of the Formulated Medical and Dental Programmes Benchmarks

The objectives of the formulated benchmarks are to:

- i. Act as a guide and tool for the HEIs designing the curriculum for the Medicine and Dentistry Programmes
- ii. Enable the National Regulatory Agencies to assess the quality of the Medicine and Dentistry Programmes
- iii. Promote harmonisation of the Medicine and Dentistry Programmes programmes in the region
- iv. Support staff and student mobility in the region
- v. Enhance the regionalisation of the labor market, which is one of the aims of the East African Community (EAC)
- vi. Guide the labour market in assessing the quality of the graduates
- vii. Harmonise and improve the quality of teaching and learning in East Africa
- viii. Contribute to the production of mutually recognisable teaching workforce in the region.

It should be noted that the document focuses on benchmarking in terms of the output rather than the process; hence focusing more on expected graduate competencies rather than the details of the content of the programmes. The output and or competencies approach were chosen because of the need to harmonise the programmes rather than homogenise them. Institutions need to maintain the uniqueness of their programmes yet be comparable locally and internationally. The process of ensuring commensurate content, pedagogy and assessment for the achievement of the learning outcomes has therefore been left to the Higher Education Institutions (HEIs) and to individual National Commissions and Councils for Higher Education, which have the regulatory function in their respective country.

1.3 Justification

Following its revitalisation and subsequent ratification of the Protocol in 2002, IUCEA initiated a reform process aimed at re-positioning itself in order to address its expanded mandate within the Community. Such reforms became necessary after the enactment of the IUCEA Act in 2009. The reforms prompted the need to establish an appropriate environment for harmonisation of higher education systems so as to promote the EAC regional integration agenda as envisioned in the Common Market Protocol. Among the important steps towards harmonisation of higher education in the region was the setting up of a regional quality assurance system for universities that was initiated in 2006.

In the process of establishing the regional QA system, the IUCEA piloted a QA handbook by subjecting selected academic programmes to internal and external review. In light of the above regional dynamics, it was deemed necessary to develop subject specific benchmarks. The current benchmark process focuses on Medicine and Dentistry. The transformation of the EAC into a Common Higher Education Area (EACHEA), has further prompted IUCEA to enhance its strategic position as an EAC institution responsible for higher education and hinge its mandate in line with the expanded responsibility on operationalisation of the EACHEA.

One of the purposes of formulating benchmarks is to support the HEIs to design or redesign the curriculum in line with what the collegial regional peers consider as a minimum yardstick required for that specific academic programme in terms of, among others, knowledge, skills, values and attitude, and also meeting the dynamic labour market expectations. It is clear that the National Regulatory Agencies of the five East African countries will apply their own criteria in the assessment of the curricula. The benchmarks are needed because learning outcomes guarantee:

- Comparable quality levels of the graduates;
- Comparable chances for the graduates in the labour market;
- Labour market knowledge about the competencies Medicine and Dentistry graduates;
- Increased national and international mobility of students; and
- Increased national and international mobility of lecturers

PART 2: THE USE OF BENCHMARKS

2.1 The Benchmarks and the Qualifications Framework

As earlier mentioned, this document is not meant to replace the innovativeness and initiatives of the EAC Partner States and institutions based on national and institutional philosophies on education, but rather to provide a regional benchmark with regard to the learning outcomes. Therefore, care has also been taken to ensure that the benchmarks are in line with the various national qualifications frameworks. Globally, within the last 10 years, there have been developments in which various countries have either formulated or are formulating a National Qualifications Framework (NQF). Such National Qualifications Framework may be regarded as the policy framework that defines all qualifications recognised nationally in post-compulsory education and training within a country. The NQFs comprise titles and guidelines which define each qualification together with principles and protocols covering articulation and issuance of qualifications, and Statements of Attainment. In the same spirit the East African countries are working towards the development and rationalising their National Qualifications Frameworks. For example, The NQF of Tanzania³ defines National Qualifications Framework (NQF) as *“a national instrument for the development and classification of qualifications according to a set of criteria for levels of learning and skills achieved.”*

The East African Qualifications Framework for Higher Education (EAQFHE)⁴ defines Qualifications Framework as *“an instrument for the development and classification of qualifications according to a set of criteria for levels of learning and skills and competences achieved.”*

Looking at the NQFs in Europe and the European Qualifications' framework, and other NQFs in other parts of the world, its clear they are efforts to describe the different levels of education. Concerning Higher Education, 3 levels are described: Bachelors, Masters and Doctorate. For the purpose of this document, only Bachelors degrees will be discussed. The level number may differ. In the European Qualification framework, Bachelor's degree is level 6 while in the EAQFHE it is level 8. However, the level descriptors are more or less the same:

3 The Tanzanian Commission for universities, National Qualification framework, final draft March, 2010

4 IUCEA, The East African Qualifications Framework for Higher Education, April, 2015

- ***Bachelor's Degree (level 8)***

The holder of a qualification will be able to apply knowledge, skills and understanding in a wide variety of contexts with substantial personal responsibility for the work of others and responsibility for the allocation of resources, policy, planning, execution and evaluation.

The current description of the Bachelors degree level is general. Clearly, in order to be operationalised, each level has to be filled in and elaborated with statements of learning outcomes. In most of the NQF's, the level descriptors are elaborated in more detailed generic learning outcomes. Each programme/discipline has to interpret the generic learning outcomes into specific course units within specific subjects.

2.2 The Benchmarks and Curriculum Design

The formulated benchmarks, as outlined below, are a good starting point in the development or reviewing of the Medicine and Dentistry programmes in East Africa.

2.2.1 Programme Objectives

The Medicine and Dentistry benchmarks should be designed in such a way that they address the concerns of different stakeholders. This should be reflected in the programme objectives. Graduates from the medical programme will make care and safety of patients and clients their primary concern. They will apply knowledge, skills and attitudes attained through education, research and training, in a competent and ethical manner.

2.2.2 Formulating the Expected Learning Outcomes

The first step in designing, redesigning, or reviewing a programme is the formulation of the learning outcomes. The purpose of the learning outcomes is to describe clearly what the student is expected to demonstrate after completing the whole programme, a module or a course. HEIs are expected to compare their already formulated learning outcomes with the benchmarks and see what is missing or what should be rephrased. For each learning outcome, one should describe how the outcome would be measured and assessed.

It is worth noting that benchmarks are based on the formulated learning outcomes. According to literature on benchmarking and learning outcomes, there are many different definitions of learning outcomes or competences. In the European Qualifications

Framework (EQF)⁵ *Learning outcomes* are defined as: statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and values and attitude. *Competence*, according to EQF, is the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. According to IUCEA⁶ learning outcomes are viewed as what a learner is expected to know and understand, and be able to do or demonstrate, on completion of a learning process within a recognized qualifications framework.

In the discussion about learning outcomes, the concept *competencies* also keeps coming up. Although the notion Competency is used regularly, it is not always clear what competences are. In all the definitions there is a hint to knowledge, applying knowledge and skills. Furthermore, there is talk about abilities and attitudes. It seems that *competencies* at this moment connotes learning outcomes and more. It includes relevant skills that may be acquired outside a programme's formal teaching and learning environment and be augmented by a learner's natural abilities and experiences. In short learning outcomes is not to be equated to competencies but the two are not mutually exclusive. A graduate exhibiting competencies at a working place will have partly acquired the skills as outcomes of his/her study. But parts of the competencies have to do with inborn characteristics.

As mentioned before, however, a learning outcome is a statement of the knowledge, skills and attitudes students should have acquired at the end of each course (module, unit) and programme. It has been observed that although universities are engaged in the practice of defining objectives and measuring outcomes in one form or another, many do not approach the process of formulating Learning Outcomes in a uniform and collaborative way. It is important to note that focusing on and defining learning outcomes would create an opportunity to:

- Enhance students' learning and mobility
- Provide guidance to instructors
- Identify and overcome barriers to effective teaching
- Facilitate collaboration among HEIs in the region and beyond

5 The European Qualification Framework for Life Long Learning, European Commission 2008

6 IUCEA, The East African Qualifications Framework for Higher Education, 2015

- Improve students' learning, retention and completion
- Produce quality graduates; and
- Increase students' chances for employability.

In this document, the following definition for Learning Outcomes is used :

Learning outcomes:

statements of the knowledge, skills, values and attitude that a learner is able to demonstrate on completion of a learning process.

Based on **Bloom's Taxonomy**, learning outcomes can be divided into:

- ***Knowledge***

Knowledge means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. Knowledge is described as theoretical and/or factual;

- ***Skills***

Skills mean the ability to apply knowledge and use know-how to complete tasks and solve problems. Skills are categorized as:

- *Cognitive skills* (involving the use of logical, intuitive and creative thinking);
- *Practical skills* (involving manual dexterity and the use of methods, materials, tools and instruments);
- *Interpersonal skills* (the way of communication, cooperation, etc).

- ***Attitude***

Attitude means a settled way of thinking or feeling about something. Four major components of attitude are: affective (emotions or feelings), Cognitive (belief or opinions held consciously), Conative (inclination for action), Evaluative (positive or negative response to stimuli).

Figure 1 shows the relationships between knowledge, skills and attitude. The model is also used to categorize the learning outcomes for Education.

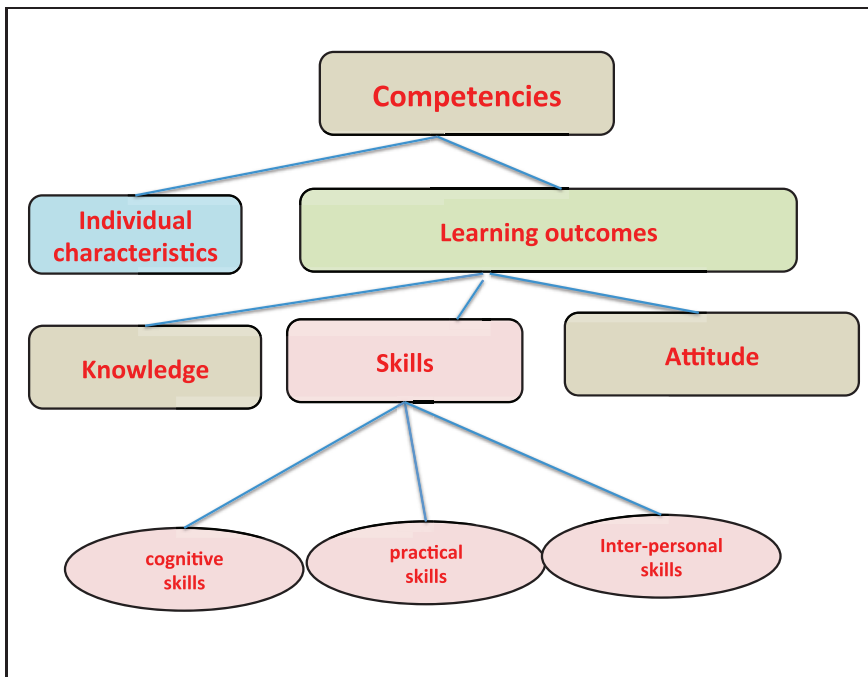


Figure 1: Categorisation of Learning Outcomes

In formulating learning outcomes, a distinction has to be made between *generic* learning outcomes and *subject specific* learning outcomes. Generic learning outcomes are those outcomes expected from all academic trained graduates. Examples of generic learning outcomes are: problem solving, communication skills, and ability to cooperate. A key characteristic of the generic learning outcomes is that they are applicable to a variety of disciplines rather than only in specific fields. Subject specific learning outcomes are those that are typical to that discipline.

2.2.3 Translating Learning Outcomes into the Programme

The next step in the process after the formulation of learning outcomes is to identify what courses are needed to achieve the specific learning outcomes. Thereafter, a distinction has to be made between the core subjects and the supporting subjects and establish what is already present in the programme (maybe with another name) and then what subjects should be added.

To check if the planned courses cover the learning outcomes, it is important to develop a curriculum alignment matrix as shown in Table 1. Each course and its learning outcomes must be developed such that they contribute to the programme's learning outcomes.

Table 1: Curriculum Alignment Matrix Template

Bachelor programme, Medicine and Dentistry					
Learning outcomes	Course 1	Course 2	Course 3	Course 4	Course 5
Communication skills	x		x		
Critical thinking		x		x	X
Problem solving					X
Cooperate/working together	x				
etc					

2.2.4 Modularisation and the use of credit points

The benchmarks do not prescribe to the HEIs what to do and how to do it. This also applies to the way the programme should be organised. The choice to follow either a modular or a course unit system is at the discretion of the university. A module is a formal learning experience encapsulated into a unit of study, usually linked to other modules to create a programme of study. The survey of the Medicine programmes in East Africa showed that there was no overall agreed calculation of credit points in the region. IUCEA produced a generic East African Credit Accumulation and Transfer System (CATS), which is part of the East African Qualifications Framework for Higher Education (EAQFHE).

Comparisons can be drawn from the ECTS module system, which is based upon the estimated amount of time/effort a student has to put into complete a module. It assumes students are studying full-time (9 - 5 p.m), 5 days a week), and are taking 60 ECTS each year. 1 ECTS = 25-30 working hours. These are not only contact hours, but include also reading, writing course work, preparing for exams and sitting exams etc. An academic year has 1500-1800 hours. So 1 year has 60 credits. A 3 year bachelor has 180 ECTS = about 5400 hours of work. An average module is 5 ECTS. Each ECTS module should therefore typically involve at least 100 hours of work. This means that a Bachelor programme of 3 years should ideally have maximal 36 modules.

2.3 The benchmarks and Quality Assurance

It is envisaged that the benchmarks will play a significant role in quality assurance of their respective programmes. Although each National Regulatory Agency applies its own criteria in assessing the quality of programmes, the benchmarks can play a significant role in harmonisation of quality assessment and quality assurance in the region. It is therefore expected that the NRAs will ideally align their standards with these benchmarks. The benchmarks also offer external assessment teams a frame of reference in assessing the quality of a program. For the HEI, the benchmarks offer a good instrument for evaluating the quality of their own programmes.

2.4 The Benchmarks and the East African Community Common Higher Education Area

Upon the Declaration of the East African Community a Common Higher Education Area (EACHEA) by the 18th Summit of the EAC Heads of State on 20th May 2017, the purpose of benchmarks has become even more critical as one of the building blocks of the East African Quality Assurance Framework. The operationalisation of the EACHEA will ensure that the use of benchmarks will be at the centre stage of harmonisation of academic programmes as enshrined in the Declaration, that is, “national higher education and training systems shall operate and be guided by the common regional framework under which curricula, examinations and certification as well as academic and professional qualifications, and the quality of the educational and training output in higher education will be harmonised”.

2.5 Implementation of the Benchmarks

The implementation of these benchmarks is the responsibility of HEIs and the oversight responsibility is that of the National Regulatory Agencies. IUCEA will provide the overall coordination and evaluation of the process.

2.6 Review of the Benchmarks

These benchmarks will be subject to review after every five-year period to take care of emerging trends in the environment.

PART 3: THE BENCHMARKS

3.0 BENCHMARKS FOR DOCTOR OF MEDICINE AND DOCTOR OF DENTISTRY

The benchmarks for degree in Medicine (MD/MBChB) and degree in Dental Surgery (DDS/BDS) contained herein have been developed as one of the set milestones for the development of an East African Quality Assurance System. The Quality Assurance system is one of the major building blocks of East African Community Common Higher Education Area (EACHEA). Benchmarks for the degree in Medicine and a degree in Dental Surgery have been developed in full consciousness that the programmes are different and therefore a need for harmonisation of the academic programmes to fulfil the needs of the EAC integration agenda on harmonisation of education systems to facilitate comparability and compatibility of education for enhancing mobility of learners and labour, mutual recognition of academic and professional qualifications, as envisioned in the Declaration of the EACHEA.

As highlighted in the foreword, the benchmarks are aimed at providing an important process of harmonisation of the training for the degree in Medicine and degree in Dental Surgery and should be beneficial to all the players in higher education sub-sector and labour market. Thus, the main objective of benchmarking is to provide a baseline for comparability of the degree in Medicine and degree in Dental Surgery and their graduates within and outside the East Africa by harmonising practice in the region. However, the benchmarks do not constitute a checklist for programme curriculum developers. They are to be used as a yardstick or a point of reference, and not as absolute standards.

3.1 The Development Process of Benchmarks in Medicine and Dentistry

The benchmarks for Medicine and Dentistry have been developed through a series of meetings held in Nairobi 15th-17th March 2017, in Kampala July 10th -12th 2017 and 27th -29th November 2017. During the first meeting in Nairobi, the following were developed :

- Draft framework of reference for Medicine and Dentistry
- Programme learning outcomes
- Curriculum alignment matrix

During the second and third meetings, in Kampala, the learning outcomes and curriculum alignment matrix were discussed, revised and finalised. Ultimately, once approved, the benchmarks will be used by various wide stakeholders that include among others Universities, Higher Education National Regulatory Agencies (NRAs), professional bodies, Ministries of Education and Ministries of Health, and employers from all the EAC Partner States.

3.2 Programme Description: Bachelor of Medicine and Bachelor of Surgery (MBChB) / Doctor of Medicine (MD)

Training in Medicine aims at producing doctors with knowledge, skills, values and attitudes that will enable them address the needs of the society. At the same time, they will have the ability for lifelong learning and be able to adjust to changing conditions in health care delivery system. They must also be able to embrace the rapid growth in scientific knowledge and technology.

3.2.1 MBChB/MD Programme goal

The goal of this programme is to produce a medical doctor who has knowledge and skills, who is professionally and ethically sound, capable of delivering essential medical care through promotion of health, prevention of disease, diagnosis, management and palliation.

3.2.2 Programme Objectives

Graduates from the medical programme will make care and safety of patients and clients their primary concern. They will apply knowledge, skills and attitudes attained through education, research and training, in a competent and ethical manner.

Specifically, the programme is intended to:

- a) Equip student with knowledge and understanding of health and its promotion, and of disease, its prevention and management, in the context of the individual, family and community;
- b) Enable student to gain proficiency and competence in basic clinical skills and procedures;
- c) Enable student acquire right attitudes required for the achievement of high standards of medical practice;

- d) Impart knowledge and skills on leadership and management in health services;
- e) Enable students develop interest in and be involved in research; and
- f) Enable students acquire lifelong learning qualities, such as critical thinking, creativity, reading etc.

3.2.3 Expected Program Learning Outcomes

The programme learning outcomes have been grouped into four thematic areas that capture the essential role of a doctor and aims at producing a holistic graduate:

1. Doctor as a scholar and scientist
2. Doctor as practitioner
3. Doctor as a professional
4. Doctor as a manager/leader

These learning outcomes conform to the concept of the “ WHO Five stars doctor” who is expected to be : Care provider, Decision maker, Communicator, Community Leader and a Manager.

3.2.3.1 The Doctor as a Scholar and Scientist (Outcomes 1-4)

- 001. BIOMEDICAL SCIENCES:** The graduate will be able to apply to medical practice the biomedical scientific principles, method and knowledge relating to anatomy, biochemistry, cell biology, genetics, immunology, microbiology, molecular biology, nutrition, pathology, pharmacology and physiology.
- 002. PSYCHOLOGICAL ASPECTS OF MEDICINE:** The graduate will be able to recognise and assess important psychological and behavioral aspects of health, illness and disease; and respond appropriately to these aspects, using strategies such as explanation, advice and reassurance to address them.
- 003. SOCIAL SCIENCES AND PUBLIC HEALTH:** The graduate will be able to implement, at a clinical level, knowledge of how to prevent disease, prolong life and promote health through organised efforts of the community. The graduate will also be able to demonstrate understanding of how to analyse a population’s health problems, establish the causes and effects of these problems and identify and implement solutions that address them.

004. EVIDENCE-BASED MEDICINE and RESEARCH: The graduate will be able to use the best available medical evidence, found through a systematic search and appraisal of the relevant information sources, to inform their clinical decisions; and generate new knowledge or personal understanding through the application of basic research methods and skills.

3.2.3.2 The Doctor as a Practitioner (Outcomes 5-9)

005. PRESENTATION, DIAGNOSIS AND MANAGEMENT OF DISEASES: The graduate will be able to describe the modes of presentation and natural history of diseases, recognise and interpret the presenting signs and symptoms, construct a differential diagnosis, and choose appropriate methods to investigate, treat and care for patients in a multiprofessional and multicultural setting.

006. COMMUNICATION: The graduate will be able to communicate clearly, sensitively and effectively with patients and their relatives, and with colleagues from the medical and other professions.

007. PROMOTION OF TEAM WORK: The graduate as a team member will be able to promote team-work and develop others' learning in order to enhance patient care.

008. EMERGENCY CARE, CLINICAL AND RESUSCITATION SKILLS: The graduate will be able to recognise, systematically assess emergency cases, institute immediate management, including first aid and resuscitation, perform a range of clinical skills and procedures safely and effectively.

009. CLINICAL PHARMACOLOGY AND THERAPEUTICS: The graduate will be able to describe how drugs act and apply this knowledge to clinical practice in prescribing appropriate drugs to treat the identified clinical condition, to promote rationale drug use and to evaluate the potential benefits and risks.

010. ICT: The graduate will be able to use information technology effectively in a medical context.

3.2.3.3 The Doctor as a Profession (Outcomes 10-11)

011. MEDICAL ETHICS, LEGAL AND PROFESSIONAL RESPONSIBILITIES: The graduate will be able to practice medicine safely, within an ethical framework, with insight and compassion, according to the legal requirements and professional standards of medical practice.

012. PERSONAL PROFESSIONAL DEVELOPMENT: The graduate will be able to take a reflective and self-directed approach to continuing professional development.

3.2.3.4 Doctor as a Manager/Leader (Outcome 13)

013. HEALTH SYSTEM MANAGEMENT: The graduate will be able to: understand the healthcare system and to provide leadership and management in health care planning, financing, prioritisation and implementation of health care programs at various levels of service delivery and advocate for quality of patients' care.

3.2.4 Core courses in an MBChB/MD programme

These are the core courses for the MBChB /MD programme , however each Institution can add their unique courses, based on their innovativeness and philosophy of the programme.

Table 2: Core courses for the Medicine Programme

No.	Core courses
1	Human Anatomy and Embryology
2	Medical Biochemistry
3	Medical Physiology
4	Behaviour and social sciences (Anthropology, Sociology and Psychology)
5	Nutrition and dietetics
6	Communication skills for health workers
7	Immunology, microbiology and parasitology
8	Pathology
9	Haematology and blood transfusion
10	Clinical chemistry
11	Biostatistics
12	Epidemiology and demography
13	Environmental health
14	Occupational health and safety
15	Research methodology
16	Health system management
17	Pharmacology and theurapeutics
18	Child health and Paediatrics
19	Internal medicine
20	Gynecology and obstetrics
21	Surgery
22	Medical jurisprudence and applied toxicology

23	Anesthesiology and critical care medicine
24	ENT
25	Ophthalmology
26	Dermatology and venerology
27	Radiology and Imaging
28	Orthopedics and trauamatology
29	Physical medicine and rehabilitation
30	Medical ethics, professional conducts and medical-legal issues
31	Mental health
32	Palliative care
33	ICT in Medicine
34	Geriatric medicine

3.2.5 The Curriculum Alignment Matrix for Medicine Programme

The development of a curriculum alignment matrix enables one to check how far the courses contribute to the programme learning outcomes. Table 3 below is a curriculum alignment matrix showing the relationship between the formulated programme learning outcomes and the courses developed.

Table 3: The Curriculum Alignment Matrix

Core courses	Expected learning outcomes of a doctor as a:												
	Scholar and Scientist				Practitioner						Professional		Manager/Leader
	1	2	3	4	5	6	7	8	9	10	11	12	13
Human anatomy and embryology	x						x						
Medical biochemistry	x					x	x						
Medical Physiology	x					x	x						
Behaviour and social sciences (Antropology, sociology and psychology)		x	x			x	x						
Nutrition and dietetics	x	x	x		x	x	x	x	x				
Communication skills for heath workers		x	x		x	x	x			x		x	
Immunology, microbiology and parasitology	x				x	x	x						

Core courses	Expected learning outcomes of a doctor as a:												
	Scholar and Scientist				Practitioner						Professional		Manager/Leader
	1	2	3	4	5	6	7	8	9	10	11	12	13
Pathology	x				x	x	x						
Haematology and blood transfusion	x				x	x	x	x	x				
Clinical chemistry	x				x	x	x	x					
Biostatistics		x	x	x	x	x	x						
Epidemiology and demography		x	x	x	x	x	x						
Environmental health		x	x		x	x	x						
Occupational health and safety		x	x		x	x	x	x					
Research methodology	x	x	x	x	x	x	x						
Health system management			x			x	x	x					x
Pharmacology and theurapeutics	x			x	x	x	x	x	x				
Child health and Paediatrics		x	x		x	x	x	x	x				
Internal medicine		x	x		x	x	x	x	x				
Gynecology and obstetrics		x	x		x	x	x	x	x				
Surgery		x	x		x	x	x	x	x				
Medical jurisprudence and applied toxicology		x	x		x	x	x		x		x		x
Anesthesiology and critical care medicine		x	x		x	x	x	x	x				
ENT		x	x		x	x	x	x	x				
Ophtalmology		x	x		x	x	x	x	x				
Dermatology and venerology		x	x		x	x	x	x	x				
Radiology and Imaging		x	x		x	x	x	x	x				
Orthopedics and traumatology		x	x		x	x	x	x	x				
Physical medicine and rehabilitation		x	x	x		x	x	x				x	

Core courses	Expected learning outcomes of a doctor as a:												
	Scholar and Scientist			Practitioner							Professional		Manager/Leader
	1	2	3	4	5	6	7	8	9	10	11	12	13
Medical ethics, professional conducts and medical-legal issues			x		x	x	x				X	x	
Mental health		x	x		x	x	x	x	x				
Palliative care		x	x	x		x	x	x				x	
ICT	x	x	x	x	x	x	x	x	x	x	X	x	x
Geriatric Medicine	x	x	x	x	x	x	x	x	x	x	X	x	x

3.2.6 Elective Period

All courses are mandatory. However, there will be a dedicated elective period whereby a student will choose/select an area of interest relevant to Medicine. The student will work with assigned supervisor and at the end of this period and the student is expected to produce a written report.

3.2.7 Credit Unit / Contact Hours

A Credit unit (CU): Credit is a measurement unit for notional or average learning time. The notional learning time includes all the activities, which a learner is expected to undertake in order to achieve the designated learning outcome. A credit is awarded when the specific set of learning outcomes for a module or program have been successfully demonstrated. Small amounts of measurable learning can therefore be credited and recorded, and can potentially be accumulated towards a minimum graduation load of 200 credit units for a five year programme and 240 credit units for six year programme.

Such activities include but are not limited to lectures, seminars/tutorials, assignments. Independent studies like project work/research, and practical training/field attachment.

A credit unit is equivalent to 15 contact hours of lectures, 30 hours of tutorial and 45 hours of practicals (bed-side teaching, lab works,...). Contact hour is a measure that represent an hour of scheduled learning activity or instruction for students.

3.2.8 Student Assessment Methods

The assessment will include:

- Continuous assessment
- Summative assessment

The assessment will be a combination of any of the following:

- Written
- Objective Structured Practical Examination (OSPE),
- Objective Structured Clinical Examination (OSCE),
- Viva voce
- Assignments
- Logbook examination
- Seminar presentation
- Project assessment
- Practicals
- Case presentation
- Clinicals

Note:

1. The programme should be formulated in such a way that a student who fails the clinical examination, fails the overall examination.
2. Continuous assessment will contribute at least 30% of the total marks.

3.2.9 Project Work

The project work is a mandatory requirement for graduation. The purpose of the project work is to promote the development and application of critical thinking and problem solving skills that are fundamental to the integration of medical science and clinical care. Students gain an understanding of the research process, limitations and variability of data, and the translation of research and critical thinking skills to clinical practice. Students are expected to articulate a relevant research question, decide on appropriate methods to address the question, collect and analyze the data, reach proper conclusions, and write a scientific report summarising their work, including implications for further inquiry and/or clinical practice.

3.2.10 Internship in Medicine

This is a training done in Medicine and it is mandatory before full registration with medical professional regulatory bodies. It is an important period in a doctor's career. During this period, many practical skills are learnt and the knowledge and skills acquired during training are consolidated. A proper attitude by the intern and good guidance given by the supervisors inducts and orientes an individual into the professional life, which serves the doctors well throughout their career.

The ideal duration of internship is two years but it should not be less than 1 year.

PART 3.3: BENCHMARKS FOR DOCTOR OF DENTAL SURGERY

Programme Description for Bachelor of Dental Surgery / Doctor of Dental Surgery

3.3.1 BDS/DDS Programme Goal

The goal of this programme is to produce a Dentist who has knowledge and skills, who is professionally and ethically sound, capable of delivering essential medical care through promotion of health, prevention of disease, diagnosis, management and palliation.

3.3.2 Programme Objectives

Graduates from the dental programme will make care and safety of patients and clients their primary concern. They will apply knowledge, skills and attitudes attained through education, research and training, in a competent and ethical manner.

Specifically, the programme is intended to:

- a) Equip student with knowledge and understanding of health and its promotion, and of disease, its prevention and management, in the context of the individual, family and community;
- b) Enable student to gain proficiency and competence in basic clinical skills and procedures;
- c) Enable student acquire right attitudes required for the achievement of high standards of dental practice;
- d) Impart knowledge and skills on leadership and management in health services;
- e) Develop interest in and be involved in research; and
- f) Acquire lifelong learning qualities, such as critical thinking, creativity, reading etc.

3.3.3 Expected Programme Learning Outcomes

3.3.3.1 The Dentist as a Scholar and Scientist (Outcomes 1-4)

This domain initially focuses on the normal structure and function of the human body and their relationship to general and oral health. Later the focus changes to structural and functional abnormalities and their effects on general and oral health.

1. **BIOMEDICAL SCIENCES:** The graduate will be able to apply to dental practice the biomedical scientific principles, method and knowledge relating to anatomy, biochemistry, cell biology, genetics, immunology, microbiology, molecular biology, oral biology, nutrition, pathology and physiology.
2. **PSYCHOLOGICAL ASPECTS OF DENTISTRY:** The graduate will be able to recognise and assess important psychological and behavioral aspects of oral health, and disease; and respond appropriately to these aspects, using strategies such as explanation, advice and reassurance to address them.
3. **SOCIAL SCIENCES AND PUBLIC HEALTH:** The graduate will be able to implement, at a clinical level, knowledge of how to prevent oral diseases as part of general health and well-being and promote oral health through the organized efforts of the community; and demonstrate understanding of how to analyse a population's oral health problems, establish the causes and effects of these problems and assist appropriately in implementing effective solutions.
4. **EVIDENCE-BASED DENTISTRY and RESEARCH:** The graduate will be able to use the best available evidence, found through a systematic search and appraisal of the relevant information sources, to inform their clinical decisions; and generate new knowledge or personal understanding through the application of basic research methods and skills.

3.3.3.2 The Dentist as a Practitioner (Outcomes 5-10)

This domain provides opportunities to learn practice and reflect on the skills and concepts that are fundamental to dentistry. It also ensures familiarity with the applicable knowledge and skills required in all areas of dentistry.

5. **PRESENTATION, DIAGNOSIS, PREVENTION AND MANAGEMENT OF ORAL CONDITIONS:** The graduate will be able to identify the oral health care needs of patients, apply and evaluate strategies for oral disease prevention, oral health maintenance and promotion for individuals and the community, provide effective and appropriate patient diagnosis and management.
6. **COMMUNICATION:** The graduate will be able to communicate clearly, sensitively and effectively with patients and their relatives, with colleagues from the dental/medical and other professions.

7. **PROMOTION OF TEAM WORK:** The graduate, as a team member will promote team-work and develop others' learning in order to enhance patient care.
8. **EMERGENCY CARE, CLINICAL AND RESUSCITATION SKILLS:** The graduate will be able to recognize and systematically assess emergency cases and institute appropriate resuscitation.
9. **CLINICAL PHARMACOLOGY AND THERAPEUTICS :** The graduate will be able to describe how drugs act and apply this knowledge to clinical practice in prescribing appropriate drugs to treat the identified clinical condition, to review appropriateness of medication and to evaluate the potential benefits and risks. A graduate will also be able to describe the application of dental biomaterials in management of oral conditions.
10. **ICT:** The graduate will be able to apply information technology to effectively manage oral conditions.

3.3.3.3 The Dentist as a Profession (Outcomes 11-12)

This domain focuses on the development of the personal and professional aspects of dental practice.

11. **MEDICAL AND DENTAL ETHICS, LEGAL AND PROFESSIONAL RESPONSIBILITIES:** The graduate will be able to practise dentistry safely, within an ethical framework, with insight and compassion, according to the legal requirements and professional standards of practice.
12. **PERSONAL PROFESSIONAL DEVELOPMENT:** The graduate will be able to take a reflective and self-directed approach to the ongoing study and practice of dentistry, to promote team-work and develop others' learning in order to enhance patient care..

3.3.3.4 The Dentist as a Manager/Leader (Outcome 13)

13. **HEALTH SYSTEM MANAGEMENT:** The graduate will be able to understand the healthcare system and to provide leadership and management in health care planning, financing, prioritization and implementation of oral health care programs at various levels of service delivery.

3.3.4 Core Courses in the BDS/DDS Programme

Table 4 : Core courses

	Core courses
1	Medical Biochemistry
2	Medical Physiology
3	Human Anatomy
4	Oral & Molecular Biology
5	General Human Pathology and oral Microbiology
6	Pharmacology and Therapeutics
7	Principles of Internal Medicine
8	Principles of General Surgery
9	Periodontology, Community & Preventive Dentistry
10	Oral Medicine
11	Oral Pathology
12	Oral and Maxillofacial Surgery
13	Oral-Maxillofacial Radiology, Imaging & Informatics
14	Oro-facial pain and anxiety management
15	Paediatric Dentistry
16	Orthodontics
17	Dental Biomaterials
18	Restorative Dentistry and Fixed Prosthodontics
19	Prosthetic Dentistry and Dental Technology
20	Public Health
21	Research Methods
22	Biostatistics
23	Leadership and Management
24	Basic Life Support and Medical Emergencies
25	Communication Skills
26	ICT
27	Medical ethics, professional conducts and medical-legal issues
28	Palliative care
29	Geriatric dentistry

3.3.5 The Curriculum Alignment Matrix for Dental Surgery

It is important to develop a curriculum alignment matrix. For each course, one has to formulate the specific learning outcomes for that course and to check how far this course contributes to the programme learning outcomes. The table below summarizes the BDS/DDS curriculum alignment matrix drawn from the expected learning outcomes (1-13) as shown in section 3.3.4 above.

Table 5: Curriculum Alignment Matrix for Dental Surgery Programme

No.	Core courses	Expected learning outcomes of a dental Surgeon as a:													
		Scholar and Scientist				Practitioner						Professional		Manager/Leader	
		1	2	3	4	5	6	7	8	9	10	11	12	13	
1	Medical Biochemistry	x													x
2	Medical Physiology	x													
3	Human Anatomy	x													
4	Oral & Molecular Biology	x													
5	General Human Pathology and oral Microbiology	x							x						
6	Pharmacology and Therapeutics		x						x	x					
7	Principles of Internal Medicine		x			x			x						
8	Principles of General Surgery		x			x			x						
9	Periodontology, Community & Preventive Dentistry		x			x			x						
10	Oral Medicine		x			x			x						
11	Oral Pathology		x			x			x						
12	Oral and Maxillofacial Surgery		x			x			x						
13	Oral-Maxillofacial Radiology, Imaging & Informatics		x			x			x	x					
14	Oro-facial pain and anxiety management		x			x			x						
15	Paediatric Dentistry		x			x			x						
16	Orthodontics		x			x			x						
17	Dental Biomaterials	x				x			x	x					x
18	Restorative Dentistry and Fixed Prosthodontics		x			x			x						
19	Prosthetic Dentistry and Dental Technology		x			x			x						
20	Public Health		x	x	x				x						
21	Research Methods		x	x	x				x						
22	Biostatistics		x	x	x										
23	Leadership and Management								x						x
24	Basic Life Support and Medical Emergencies		x			x			x						
25	Communication Skills						x		x		x	X	x		
26	ICT	x	x	x	x	x	x			x	x	X	x		x
27	Medical ethics, professional conducts and medical-legal issues			x		x	x					X	x		
28	Palliative care		x	x	x		x		x				x		
29	Geriatric dentistry	x	x	x			x		x	x		X			

3.3.6 Elective Period in Dentistry

All courses in BDS/DDS are mandatory. However, there will be a dedicated elective period whereby a student will choose/select an area of interest relevant to Dentistry. The student will work with assigned supervisor and at the end of this period and expected to produce a written report.

3.3.7 Credit Unit/Contact Hours

A Credit unit (CU): Credit is a measurement unit for notional or average learning time. The notional learning time includes all the activities, which a learner is expected to undertake in order to achieve the designated learning outcome. A credit is awarded when the specific set of learning outcomes for a module or program have been successfully demonstrated. Small amounts of measurable learning can therefore be credited and recorded, and can potentially be accumulated towards a minimum graduation load of 200 credit units for a five year programme and 240 credit units for six year programme.

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The assessment will be a combination of any of the following:

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Note:

- a) The programme should be formulated in such a way that a student who fails the clinical examination, fails the overall examination.
- b) Continuous assessment will contribute at least 30% of the total marks.

3.3.9 Project Work in Dentistry

The project work is a mandatory requirement for graduation. The purpose of the project work is to promote the development and application of critical thinking and problem solving skills that are fundamental to the integration of medical/dental science and clinical care. Students gain an understanding of the research process, limitations and variability of data, and the translation of research and critical thinking skills to clinical practice. Students are expected to articulate a relevant research question, decide on appropriate methods to address the question, collect and analyse the data, reach proper conclusions, and write a scientific report summarizing their work, including implications for further inquiry and/or clinical practice.

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The ideal duration of internship is two years but it should not be less than 1 year.

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