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FACULTY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF PURE AND APPLIED SCIENCES

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PROPOSED CURRICULUM

For

BACHELOR OF SCIENCE IN BIOCHEMISTRY

Submitted to

The Commission for Higher Education, Kenya

P.O. Box 54999-00200

NAIROBI

MAY, 2011

This Proposal was approved by the Commission for Higher Education on 16/12/2011

AUTHORISED SIGNATURE

iv) Course Units

A course unit is determined by the number of credit hours required for each unit per trimester. Total number of course units required per programme for graduation is determined by the number of credit hours required for graduation.

b) Academic Organization of the Programmes

The organization structure of the university programmes are according to trimesters.

KEY:

CH - Credit Hours
L - Lecture hours per week
T - Tutorial hours per week
P - Hours of practical work per week
TH - Total time table hours per week

2.0 THE CURRICULUM RATIONALE

2.1 Title of the Programme: Bachelor of Science in Biochemistry

2.2 Philosophy of the Programme

Biochemistry is the study of the chemistry of living organisms. Biochemists seek a molecular explanation of life by attempting to understand its underlying principles. Biochemistry is concerned with the relevance of a molecule to an organism and the correlations between its structure and its function. Modern biochemistry grew out of the application of chemical techniques to biological problems and is the foundation of biological science and medicine.

The Bachelor of Science in Biochemistry curriculum seeks to address the need for specialized skills in disease diagnosis, crime detection and pharmaceutical industry. This program is designed for students who intend to pursue careers in research institutions, medical laboratories, food and beverages and quality assurance industries, academia, pharmaceutical companies, forensic

investigations, nutritional counseling and self-employment in a biochemical/biotechnology entrepreneurship.

The Department of Pure and Applied Sciences in the Faculty of Science and Technology shall be the one responsible in implementing and managing this program. The mission of the department of Pure and Applied Sciences is "*To excel in the production of outstanding and dynamic graduates in Pure and Applied Sciences for the world market*".

The promotion of discovery and application of scientific knowledge for the betterment of human life and the entire creation is the greatest challenge today in the world. Kenya Methodist University at all cost must act in response to this challenge. Its academic programmes must therefore be market oriented and consumer tailored to equip its graduates for demands of the current competitive global market.

The Pure and Applied Science department proposes to respond to this challenge by diversifying its programmes to meet the needs of regular students and creating opportunities for the general working force to advance academically without interfering with their routine activities in their work stations. Currently the department is running the B.Sc in Applied biology programme which has two options (Bio-Utility and bio management and Microbiology).

On this platform, the department will be endeavoring with the vision and mission of university in the following ways:

1. Development of scholarly competency, skills, attitudes and moral values through quality teaching and learning.
2. Promotion of the discovery and application of scientific knowledge through quality research.
3. Provision of selfless service and stewardship to humanity.

The philosophy of the department remains as "*promoting the discovery and application of scientific knowledge in a manner that prepares the students to*

contribute effectively, intellectually and ethically as citizens of a dynamic scientific community".

2.3 Rationale for the Bachelor of Science in Biochemistry Programme

The Biochemistry Programme is academically oriented and designed to provide students with a fundamental understanding of the theoretical and practical aspects of the discipline. The programme offers training in problem solving mainly using a molecular approach. Biochemistry specialists will gain experience in critical thinking and the skills required to evaluate scientific rationale. The programme will also recognize the necessity of research to keep abreast of and to be part of the changes taking place in their area of specialization.

This course has many fields i.e. cancer research, cell biology, enzymology, food and nutrition, signal transduction, toxicology, environmental biochemistry, molecular biology and biotechnology etc.

After completing the Biochemistry course, an individual can have great career opportunities such as molecular biology, marine biology, industrial chemistry, virology, genetics and horticulture.

After completing this course, will have gained scientific knowledge and develop various ways to apply its knowledge in specialized areas like medicine, agriculture, veterinary science, environmental science and manufacturing. As a Biochemist, an individual may perform many tasks such as:-

- chemical processes that occur within individual cells
- study the processes like digestion and growth that involve whole organisms
- undertake the detailed analysis of chemical with the usage of sophisticated instruments and techniques

The course will open avenues for employment in various sectors of the economy in government, private sector and corporate.

2.4 Goal of the BSc in Biochemistry Programme

The goal of the Biochemistry Curriculum is to give students a solid background in this unique discipline. There are many possibilities, so the biochemistry degree gives students a great deal of flexibility in their career choices.

2.5 Expected Learning Outcomes of the Programme

By the end of the four years of training, the learners should be able to;

i) Acquire appropriate skills and competence to work in various careers such as pharmaceutical, food, cosmetics, Agriculture or biotechnology industries as well as in regulatory agencies in government, NGOs and health.

ii) Be equipped with the skills they need to contribute to the many advances being made in medicine for both human and animals, as well as in genetic engineering, biotechnology and agriculture.

iii) Equip those who have an interest in biochemistry as well as business have an opportunity to enter the business world as managers with a firm grasp of the science or technology of the companies for whom they will work after combining business-oriented degrees.

iv) Pursue either a Master's or a PhD degree in biochemistry at the graduate level of study.

2.6 Mode of Delivery of the Proposed Programme

The BSc in biochemistry Programme will be taken using any of the following three modes of study: full-time, part-time and distance learning (DLM).

Full-time and **part-time** modes of study use a face to face strategy for programme delivery. A multifaceted approach shall be used, employing mainly those methods that encourage learner-centred active learning including small group tutorials, overviews, laboratory practicals, field trips and research projects.

The **Open Distance Learning** mode **(ODLM)** of study uses both hard and soft materials that are modelled for self study. The materials include interactive