

Teaching Biochemistry in Ghana

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Introduction

In Ghana, Biochemistry is more often taught as auxiliary subject in most of the Universities. Of the five Universities, only two of them trained students to become Biochemists in areas of Food Science and Technology, Clinical Biochemistry, Nutritional Biochemistry, etc.

All the Universities have Biochemistry Departments in which institutions and schools within these universities offer biochemistry as one of their multidisciplinary courses. Examples are the School of Medical Sciences, Institution of Renewable Resources, etc.

The student enrolment statistics

The two universities that trained Biochemists are the University of Ghana (UG) and Kwame Nkrumah University of Science and Technology (KNUST). In case the students population in KNUST 116, 85, 133 and 54 for first, second, third and fourth year students respectively. Hence undergraduate population is 388. Postgraduate population is 21, with 11 and 10 as first and second year postgraduate students respectively for 2003/2004.

The types of biochemical training

Currently, KNUST and UG offer a four (4) year B.Sc. programme, a two (2) year M.Sc. programme in Food Science and Technology, a two (2) year M.Phil. programme by research in Biochemistry (Food or Clinical) and a three (3) year PhD. Programme in Biochemistry (Food or Clinical)

Syllabus

Undergraduate course structure

For first year, the core discipline is General Biochemistry and the auxiliary disciplines are as follows; Inorganic, basic Physical and basic Organic Chemistry, Cell structure, Genetics, Communication Skills and post S.S.S. mathematics. The practical training is Practical chemistry.

For second year, the core discipline is metabolism

and the auxiliary disciplines are as follows; Organic and Physical chemistry, Electroanalytical methods, Titrimetric methods of analysis, Basic microbiology, mammalian physiology and introduction to computers.. The practical training is practical chemistry.

For third year, the core disciplines are as follows: metabolism, Analytical, Fermentation and Food biochemistry and Biochemical engineering. The auxiliary disciplines are Biophysics, Food microbiology, principles of economics and Introduction to statistics. There is no practical training.

For fourth year, the core disciplines are as follows; Enzymology, Biochemistry of Genetics and Recombinant DNA technology, Biochemical literature, seminar and research project, Food processing and preservation, Medical, Comprehensive and Nutritional Biochemistry, Endocrinology, experiment designs and Immunology. The auxiliary discipline is Principles of Management. There is no practical training.

Postgraduate course structure

The two year programme consist of one year taught courses and a second year of research work for M.Sc in Food Science and Technology programmes but in the case of M.Phil in Biochemistry programmes, the course is by research for the two years. M.Phil. Student audit certain courses upon recommendations of their supervisors.

For the M.Sc. in Food Science and Technology, taught courses offered at the first year are as follow: the core disciplines are Food Chemistry, Food Microbiology and Sanitation, Food Processing, post harvest technology, Sensory Analysis, Quality Assurance and Food Legislation, Food Product Development, Food Packaging and Food hydrocolloid chemistry. The auxiliary disciplines are Introduction to Computers and Statistical Methods.

The second year programme is on research project and thesis in food related areas. A seminar to present

finding from research projects.

Teaching aids

There are generally either no or very few teaching aids to make an impact on teaching of biochemistry in almost all the five universities.

Constraints and solutions

Students are not exposed to a lot of practical training in biochemistry due to logistics and their large number. The government has to increase funding to these universities in order provide them with adequate logistics to perform and also pay lecturers better salaries to attract more young intelligent people into the profession, so as to help cope with the large number of students.

Conclusions and recommendations

The first and second year courses for the undergraduate are tailored to prepare them for the actual biochemistry training, so the need for more auxiliary subjects. I will recommend that more practical work in biochemistry should be added to the programme in order to give the students better understanding. Teaching aids should be part of the teaching of biochemistry so that students can have a feel of how certain three dimension structure materials mentioned in books and lectures look like. I recommend vacation attachment to hospital and industrial laboratories to help students know the branch of biochemistry they wish to pursue right from first year.