



Bachelor of Technology in Analytical Chemistry

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International
University-Africa

Education to take you places

PROGRAM DESCRIPTION



This program is anchored in the belief that graduates who are well equipped with appropriate knowledge, skills and values deliver excellent professional services. The program is thus designed to instill the requisite knowledge, skills and attitudes for designing, conducting and analyzing samples using analytical instrumentation, write reports and manage a laboratory. The program objectives contribute to the University mission outcomes which are higher order thinking; literacy; global understanding and multicultural perspective; preparedness for career; community service; and leadership and ethics.

The goal of the Bachelor of Technology in Analytical Chemistry is to provide students with hands-on practical experiences in the laboratory in the core areas of analytical chemistry such as instrumentation, quality control and quality assurance of laboratory practices. Students will be able to demonstrate the ability to conceptualize, identify and collect relevant chemical data and present findings in a scientific context.

PROGRAM LEARNING OUTCOMES

Upon completion of the BTc in Applied Biochemistry program, students will be able to:

- Apply chemical concepts and theories in addressing current scientific problems;
- Design and carry out experiments using appropriate analytical methods and protocols;
- Evaluate experimental data with the appropriate statistical methods and communicate scientific reports with a high level of professionalism to chemists and non-chemists;
- Conduct research to solve chemical problems and explore new areas of research;
- Use proper procedures and regulations for safe handling, storage, and use of chemicals;
- Undertake quality control in industrial, private, institutional or research laboratories.

DEGREE REQUIREMENTS 187.5 UNITS

GENERAL EDUCATION

39 UNITS

SIGNATURE COURSES

12 UNITS

STRATEGIES FOR UNIVERSITY SUCCESS

3 UNITS

SUS 1010 Strategies for University Success

RESEARCH METHODS

3 UNITS

GRM 2000 Introduction to Research Methods

COMMUNITY SERVICE OR COMMUNITY PROJECT

3 UNITS

CMS 3700 Community Service

THE SENIOR EXPERIENCE

3 UNITS

SEN 4800 Integrated Seminar

WRITTEN, ANALYTICAL, CRITICAL THINKING SKILLS

12 UNITS

ENGLISH LANGUAGE

6 UNITS

ENG 1106 Composition I (WI)

ENG 2206 Composition II (WI)

FOREIGN LANGUAGE

6 UNITS

Student must have a credit transfer for a foreign language or must take up to two- course foreign language sequence of one language. USIU-Africa offers courses in Arabic, French, Japanese, Spanish, Swahili and Chinese.

QUANTITATIVE AND TECHNOLOGICAL SKILLS 6 UNITS

IST 1010 Introduction to Information Systems
MTH 1109 College Algebra

GENERAL EDUCATION ELECTIVES	9 UNI
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(Choose three courses- at least two should be from lower level

ENT 1010	Introduction to Entrepreneurship (Lower elective)
SOC 2201	Introduction to Sociology (Lower Elective)
PHL 3310	Ethics and Value Theory (Upper Elective)
BUS 4090	Strategic Management (Upper Elective)

CORE COURSES **148.5 UNIT**

CHE 1100	Foundations of Chemistry
CHE 1400	Fundamentals of Physical Chemistry
MTH 1110	Calculus
PHYS 1001	Physical Mechanics
CHE 1110	Chemistry of the Main Group Elements
CHE 1300	Fundamentals of Organic Chemistry
PHYS 1002	Elements of Physics
MTH 2010	Probability and Statistics
CHE 1200	Basic Qualitative and Quantitative Chemical Analysis
CHE 1500	Green Chemistry and Sustainable Development
CHE 2200	Techniques in Analytical Separation
CHE 2210	Analytical Spectroscopy
CHE 2220	Basic Chemometrics
CHE 2300	Carbonyl Compounds and Derivatives
CHE 2500	Environmental and Water Chemistry
CHE 2100	Transition Metal and Coordination Chemistry
CHE 2310	Aromatic Chemistry
CHE 2320	Chemistry of Biomolecules
CHE 2400	Chemical Thermodynamics and Thermochemistry
CHE 2410	Chemical Kinetics
CHE 2000	Practicum
CHE 3000	Research Methods: Capstone Experience
CHE 3200	Quality Control and Quality Assurance
CHE 3210	Nanoscience and Nanotechnology
CHE 3300	Organic Spectroscopy
CHE 3400	Principles of Electrochemistry
CHE 3600	Industrial Chemistry
CHE 3001	Research Project in Analytical Chemistry
CHE 3220	Electroanalytical, Thermoanalytical and Radioanalytical Techniques

CHE 3410	Phase Equilibria
CHE 3500	Computer Applications in Chemistry
CHE 3700	Industrial Biochemistry
CHE 3002	Research Project in Analytical Chemistry II
CHE 3250	Electronic Measurement and Signal Processing
CHE 3260	Bioanalytical Techniques (Sensors and Biosensors)
CHE 3270	Forensic Methods of Analysis
CHE 4000	Industrial/Field Attachment Elective I (Choose 1 of the following)
CHE 3044	Polymer Processing
CHE 3110	Surface and Colloid Chemistry Elective II (Choose 1 of the following)
CHE 3092	Industrial Processes and Environment
CHE 3240	Chemical Processes and Equipment Design



ADMISSION REQUIREMENTS

To obtain admission into the program, an applicant must satisfy one of the following requirements:

- Kenya Certificate of Secondary Education (KCSE) or its equivalent with a minimum aggregate of C+ and attained the following minimum grades in the specified subjects: C+ in Chemistry, C+ in Physics or Biology or Biological Science, C+ in Mathematics and C+ in English.

or

- Kenya Advanced Certificate of Education (KACE) with two principal passes in Chemistry and Mathematics and a subsidiary.

or

- Five (5) upper level passes at IGCSE/IB.

or

- Five (5) credits in any 5 subjects at 'O' Level, and/or 'A' Level passes of C at GCE.

or

- Holders of KNEC Diploma in Analytical Chemistry or its equivalent earned from accredited institutions with a credit in Analytical Chemistry courses.

CAREER OPTIONS

Graduates should be able to launch a successful career in both public and private sectors within a broad range of scientific spectrum such as laboratory assistants, laboratory technologists and managers or pursuing various chemistry research opportunities.

CONTACTS

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**Accredited in Kenya & the United States of America
by the Commission for University Education
(CUE) and WASC Senior College and University
Commission respectively.**