BTech.
Analytical Chemistry

USIU-Africa is accredited in Kenya by the Commission for University Education (CUE) & the United States of America by WASC Senior College and University Commission respectively.

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Education to take you places

PROGRAM DESCRIPTION

The Bachelor of Technology in Analytical Chemistry equips graduates with the knowledge, skills, and values needed for excellence in professional practice. The program emphasizes hands-on laboratory experience in analytical instrumentation, quality control, and quality assurance. Students will develop competencies in designing and conducting analyses, managing laboratories, and presenting scientific findings, aligning with the university's mission of critical thinking, global understanding, career readiness, and ethical leadership.

LEARNING OUTCOMES

Upon completion of the BTech. in Analytical Chemistry program, students will be able to:

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

DEGREE REQUIREMENTS — 187.5 UNITS

GENERAL EDUCATION — 39 UNITS

SIGNATURE COURSES — 15 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 Senior Seminar

FUNDAMENTALS OF INFORMATION LITERACY — 3 UNITS

FIL 1010 Fundamentals of Information Literacy

LANGUAGE STUDIES — 12 UNITS

ENGLISH LANGUAGE — 6 UNITS

ENG 1106 Composition I (WI)
ENG 2206 Composition II (WI)

FOREIGN LANGUAGE — 6 UNITS

Students must have credit for a foreign language or must take up to a two-course foreign languagesequence of one language.
USIU-Africa offers courses in Arabic (ARB1000), French (FRN1000), Japanese (JPN1000), Spanish (SPN1000), Swahili (SWA1000), Chinese (CHI1000) and Kenya Sign Language (KSL1000).

DISCIPLINARY GENERAL EDUCATION ELECTIVES — 6 UNITS

IST 1010 Introduction to Information Systems
MTH 1109 College Algebra

SCHOOL-BASED GENERAL EDUCATION ELECTIVES — 9 UNITS

Choose three courses – at least two should be from lower levels:

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 UNITS

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 Quatative and Quantitative Chemical Analysis
CHE 1500	Green Chemiry and Sutainable 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 Meal and Cordination 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

CAREER OPPORTUNITIES

A Bachelor of Technology in Analytical Chemistry opens up a wide range of career opportunities.

Here are some potential career paths:

1. Analytical Chemist
2. Quality Control/Quality Assurance Officer
3. Forensic Scientist
4. Environmental Chemist
5. Pharmaceutical Analyst
6. Industrial Chemist
7. Food and Beverage Analyst
8. Research Scientist
9. Chemical Process Engineer
10. Bioanalytical Scientist

CONTACTS

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