

CHEMISTRY

Programme Overview

Students pursuing the Chemistry major and doing three (3) majors must complete seven (7) courses in the four (4) semesters for a combined 21 units of credit. Those students doing two (2) majors must complete eight (8) courses in four (4) semesters for a combined 24 units of credit. All first year courses are compulsory. In the second year students are provided with options. Students doing two (2) majors must choose two optional courses in Year II, while those doing three (3) majors only need to choose one of these courses. Allocation of courses per semester is tabulated below and course descriptions are provided.

Rationale

The teaching of a scientific discipline requires the application of pedagogical methods that allow students to explore the theoretical principles and concepts in a variety of approaches. These methods offer opportunities to develop skills of critical thinking, synthesis of concepts, intellectual expression, experimentation and research. Opportunities for such development will be provided by interactive lectures, group activities involving problem solving, research projects, presentations and practical exploration. Wherever possible, application and relevance of the principles and concepts to natural and man-made systems will be stressed. Students will therefore be equipped with the prerequisites for higher academic achievement and the skills to apply the acquired knowledge in related fields.

Objectives

- To provide students with a sound knowledge and understanding of fundamental chemical principles and concepts
- To expose students to everyday and industrial applications of chemistry
- To equip students with the knowledge and skills for advanced study in chemistry or careers in applied chemistry
- To enhance students' appreciation of the importance of chemistry

Admission Requirements

Students pursuing the Chemistry major must satisfy the minimum BCC entry requirements in addition to having passed CXC Chemistry General Proficiency at Grades 1, 2 or 3 or the equivalent.

COURSE STRUCTURE

YEAR 1 SEMESTER 1		
CODE	COURSE TITLE	CREDITS
CHEM 111	Foundation Chemistry	3
CHEM 112	Laboratory Methods I	3
YEAR 1 SEMESTER II		
CHEM 121	Physical Aspects	3
CHEM 122	Organic Aspects	3
YEAR II SEMESTER I		
CHEM 211	Industrial Chemistry I	3
CHEM 212*	Environmental Chemistry	3
or CHEM 213*	Food Chemistry	3
YEAR II SEMESTER II		
CHEM 221*	Industrial Chemistry II	3
CHEM 222*	Laboratory Methods II	3

*Optional Courses

COURSE DESCRIPTION

CHEM 111: Foundation Chemistry

This course is designed to provide students with the necessary fundamental mathematical skills and applications to perform calculations in chemistry. It also allows them to study the behaviour of various elements on their own and more so in relation to other elements. As a result students are able to make critical analyses and deductions on the nature of elements and the compounds they form.

CHEM 112: Laboratory Methods I

An introduction to the proper use and care of laboratory equipment and to fundamental laboratory methods of analysis will be covered. The concept of green chemistry will be introduced with emphasis on waste minimization.

CHEM 121: Physical Aspects

The fundamental concepts and principles in physical chemistry are covered in this course. It is designed as a foundation course that will provide a basis for the application of the concepts covered in chemistry courses in year 2 of the programme. In this course, emphasis is placed on the manipulation of numerical and other data, as well as students' problem-solving ability.

CHEM 122: Organic Aspects

This course is designed to introduce students to the study of organic chemistry as an important and unique discipline in chemistry. Students will be taught how to name organic compounds, characteristic chemical organic reactions, the mechanisms for these

reactions and most importantly the application of organic chemistry to everyday life and related disciplines.

CHEM 211: Industrial Chemistry I

The application of various fundamental concepts in physical and inorganic chemistry to the industrial process is the focus of this course. Description of properties of selected elements and their compounds, as well as methods used in the production of industrially important materials are covered. Along with a description of the industrial procedures, there is an examination of the environmental concerns associated with the use and production of these materials.

CHEM 212: Environmental Chemistry

This course provides students with an understanding of the chemistry of the environment. Emphasis is placed on the chemistry of the natural processes of the environment and to the chemical impact of anthropogenic activities.

CHEM 213: Food Chemistry

Aspects of chemistry that relate to food and nutrition are covered in this course. It examines the various food nutrients and their role in the body, the process by which energy is derived from food, the effects of additives, the consequences of methods used in food processing and the factors to be considered for food storage.

CHEM 221: Industrial Chemistry II

Exposure to the applications of laboratory methods and organic chemistry in industrial technologies is provided in this course. Emphasis is placed on the methodologies used to ensure quality control of the product.

CHEM 222: Laboratory Methods II

Students are introduced to advanced methods of laboratory analysis in this course. Emphasis is placed on the use of modern spectroscopic methods in quantitative and qualitative analysis with industrial and medical applications.