Education within the reach of all
A Ministry of Calvary Chapel-Port-au-Prince
(509) 2209-5686 - administration@uespoir.edu.ht - www.uespoir.edu.ht

Syllabus

Course Title

COLLEGE ALGEBRA

Objective:

The aim of this course is to assist the student in mastering the fundamental concepts of algebra, including topics such as an introduction to set theory, algebraic expressions, equations, and inequalities, among others.

Materials and Books: The course will utilize the following texts:

- "Algebra and Trigonometry" by Michael Sullivan.
- The introduction to set theory will be taken from the book "SETS THEORY" in the SCHAUM's series.

I.- **Revision** :

II.- Equations and Inequalities

Linear Equations and Quadratic Equations

Solving linear equations and quadratic equations.

Understanding the properties and characteristics of quadratic equations.

Complex Numbers:

Introduction to complex numbers and their representation in the complex plane.

Solving quadratic equations involving complex numbers.

Equations with Radical:

Solving equations that contain square roots or other radicals.

Equations and Inequalities with Absolute Values:

Solving equations and inequalities that involve absolute value expressions.

III.- Graphs:

Dilatance and Midpoint Formulas:

Understanding the formulas for dilatance (stretching or shrinking) of graphs.

Understanding the formula for finding the midpoint of a line segment.

Graphs of Equations with Two Variables:

Plotting graphs of equations involving two variables.

Identifying intersections of graphs.

Exploring symmetry in graphs.

Lines and Circles:

Understanding the characteristics and properties of lines and circles on graphs.

Analyzing variations in these graphs.

IV.- Functions and Their Graphs:

In this section, students will be introduced to the concept of functions and how to represent them graphically.

V.- Linear and Quadratic Functions:

This part of the course will focus on linear and quadratic functions and their properties.

VI.- Polynomial and Rational Functions:

Students will learn about polynomial and rational functions and their behavior on graphs.

VII.- Exponential and Logarithmic Functions: This section will cover exponential and logarithmic functions, including composite functions, one-to-one functions, and inverse functions.

Exponential and Logarithmic Functions: In this part, students will explore exponential and logarithmic functions, along with their properties. They will learn about the properties of logarithms, solve logarithmic and exponential equations, and understand the relationship between these functions.

VIII. - Trigonometric Functions:

Angles and their measurement.

The right triangle.

Trigonometric functions of acute angles.

Trigonometric functions of any angle.

Introduction to the unit circle and properties of trigonometric functions.

Graphs of sine, cosine, tangent, cotangent, secant, and cosecant functions.

IX.- Analytical Trigonometry:

Inverse trigonometric functions.

Trigonometric identities.

Sum and difference formulas.

Double-angle and half-angle formulas.

Sum-to-product and product-to-sum formulas.

Trigonometric equations.

X.- Applications of Trigonometric Functions:

Laws of sines and cosines.

Area of a triangle using trigonometry.

XI.- Polar Coordinates and Vectors.

XII.- Analytic Geometry:

Conics (parabola, ellipse, and hyperbola).

XIII.- Introduction to Sequences and Series:

Numeric sequences.

Mathematical induction.

Binomial theorem.