BLUECREST UNIVERSITY COLLEGE, ACCRA

COURSE STRUCTURE AND OUTLINE (SYLABUS)

REGULAR SCHOOL

A. COURSE DETAILS					
COURSE CODE	**MAT001 Algebra**	**CREDIT HOURS**	3	**LEVEL**	
COURSE TITLE	Algebra				
ACADEMIC YEAR	2025/2026	**SEMESTER**			
PROGRAMME[S]					
B. COURSE INSTRUCTOR DETAILS					
NAME	Mr. Emmanuel Gyimah Osei				
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Course Description:

The objective of this course is to provide students with a solid foundation in algebraic concepts and their applications. By the end of the course, students will be able to understand and manipulate basic algebraic expressions, solve equations and inequalities, graph various functions, work with exponents and logarithms, analyze polynomial and rational functions, and apply algebraic techniques to solve systems of equations using matrices.

Course Objectives

Upon Successful Completion of the Course, students should be able to

1. Understand and apply the basic terminology and notation of algebra.
2. Simplify algebraic expressions and perform operations with polynomials.

3. Solve linear equations and inequalities.
4. Apply algebraic techniques to solve real-world problems.
5. Perform transformations on functions and interpret their effects on graphs.

Week	Topic
2	**Polynomials** Polynomials: definition, addition, subtraction, and multiplication of polynomials Factoring: factoring of binomials and trinomials
3	**Linear equations and inequalities** Solving simple linear equations; finding gradients and equations of straight lines; sketching linear functions; and manipulating and solving simple linear inequalities.
4	**Quadratic equations and inequalities** Solving quadratic equations by various methods, sketching quadratic functions, and applying quadratic equations in finding the minimum cost and maximum profit/revenue of a firm.
5	**Polynomials continue** Division of polynomials (long division method), the remainder theorem, and the factor theorem Use of remainder and factor theorems to solve polynomial equations Sketching of cubic functions
6	**Systems of linear equations in two variables** Using substitution and elimination methods to solve a two-variable system
7	**Systems of linear equations in three variables** Using elimination and substitution techniques to solve systems of linear equations in three variables.
8	**Indices and logarithms, and Surds** Roots and powers; rules of powers and indexing actual figures; writing indices in logarithm form and vice versa. Reducing a surd to its lowest form, and the algebra of surds.
9	**Percentage, ratio, and proportion** Percent to measure increase and decrease, ratio and proportion to calculate profit and loss.
10	Matrices and their Applications
11	Review & Applications

Mode of delivery:

Lectures, seminars, demonstrations

A. COURSE ASSESSMENT

Grade in the course would be determined by a student's performance in a mid-semester and end of semester exams**.** The mid semester exams would be made up of both assignment and mid-semester exams. The breakdown of the marks is as follows:

Final Exams	-	60%
Mid-semester Exams	-	20%
Group Assignment	-	10%
Assignments (individual)	-	10%
Total	**-**	**100%**

Reading list:

Larson, R., & Edwards, B. (2019). Elementary Linear Algebra: Applications Version (12th ed.). Cengage Learning.

Gallian, J. A. (2017). Contemporary Abstract Algebra (9th ed.). Cengage Learning.

Lay, D. C., Lay, S. R., & McDonald, J. A. (2018). Linear Algebra and Its Applications (5th ed.). Pearson.

Hungerford, T. W. (2018). Abstract Algebra: An Introduction (3rd ed.). Cengage Learning.

Anton, H., Rorres, C., & Kaul, V. (2020). Elementary Linear Algebra: Applications Version (12th ed.). Wiley