COURSE OUTLINE

FOUNDATION MATHEMATICS - BMA: 1106
Credit Hours: 3 Credits
Contact Hours: 42 Hours
PURPOSE: the learner to acquire Basic mathematical concepts in order to prepare for the advanced courses and acquiring positive attitude, knowledge and skills which will be relevant to her/his life in the university.
COURSE OBJECTIVES: By the end of the course the learners should be able to:-

i. Develop a positive towards learning mathematics
ii. Perform mathematical operations and manipulations with confidence, speed and accuracy
iii. Think and reason precisely, logically and critically in any given situation
iv. Develop investigative skills in mathematics
v. Differentiate any given function

Apply the techniques of differentiation to determine the optimum values and rate of change
Apply differentiation in dynamics and higher derivatives
Define integration as a reverse of differentiation
Define, state and use the techniques of integration to any function

TOPIC	SUBTOPIC	CONTENT
NUMBERS	Numbers	Natural numbers, integers, rational numbers, real numbers, Surds- a rational number , rationalizing denominator Sets and sets operations
	Logarithms	Indices – exponents laws Logarithms – laws of logarithms, change of base, applications of logarithms and exponential to conversion of non- linear form, exponential and logarithmic functions
ALGEBRA	Equations and inequalities	Simple linear equation –linear inequalities, straight line graphs, algebraic fraction, simultaneous linear equation Quadratic equations – expansion, factorization, completing square, formula and discriminant, simultaneous equations, factor\remainder and its application to solutions of higher degree, disguised quadratic and linear equations involving exponentials and logarithms
	Expansions	Permutations and combinations Binomial expansions and their applications
	Functions	Mapping- domain, range and co-domain Composite function, inverse function Transforming of graphs of a function.
Matrices	Matrix algebra	Definition of a matrix, operations with matrices, matrix method of solving linear simultaneous equations, transition matrices
DIFFERENTIONS	Derivative of functions	Derivatives of polynomials, logarithms and exponentials
	Different ion rules	Sum, product, quotient and chain rules

	Optimum	Maximum, minimum and point of inflexion. Increasing and decreasing function.
	Anti – differentiation	Definite and indefinite integrals using inspection , summation
	Techniques of integration	Substitutions, partial fractions, integration by parts
EVALUATION	COURSE	Assignments and CATS 30% Final examination - 70% Total -100%

Teaching/ Learning methods lectures and tutorials, group discussion, demonstration and assignments

Recommended text books

i) Pure mathematics 1 by backhouse
ii) Basic mathematics by Brittinger and keedy
iii) Finite mathematics by Howard L. Rolf