BSED Mathematics Major Course Descriptions

MPSGEOMETRY: Plane and Solid Geometry
Units: Lec: 3 Lab: 0 **Pre-requisite: 2MATHMWORLD**

This course provides the students with the basic knowledge and skills about plane Euclidean Geometry. It uses both inductive and deductive methods to develop the students' understanding of the geometric properties of various plane and special figures. It also aims to develop the students' reasoning skills through proofs and investigative activities.

MCADVALGEBRA: College & Advanced Algebra
Units: Lec: 3 Lab: 0 **Pre-requisite: 2MATHMWORLD**

This course provides students with a basic understanding of various functions, including their characteristics, graphs and applications. It includes the study of the Real Number System and its properties, the operations on different types of algebraic expressions, and the solution of various types of equations and inequalities.

MTRIGONOMETRY: Trigonometry
Units: Lec: 3 Lab: 0 **Pre-requisite: 2MATHMWORLD**

This course provides the students with a basic understanding of trigonometric functions and their inverses, including their graphs, characteristics, and applications. It also includes a study of the trigonometric identities and their applications in problem solving.

MATHINVEST: Mathematics of Investment
Units: Lec: 3 Lab: 0 **Pre-requisite: MHISTMATH**

This course provides the students with a basic understanding of the applications of mathematical concepts and skills in economics, business and accounting especially in terms of the use of mathematics in financial transactions. It includes determining the time value of money using simple and compound interest and discounting, variation of annuities, amortization and sinking fund.

MESTATPROB: Elementary Statistics & Probability
Units: Lec: 2 Lab: 1 **Pre-requisite: MCADVALGEBRA**

This course presents the basic statistical concepts involved in the design
and data analysis of experiments. It also introduces students to the mathematics of chance, including fundamental counting techniques, probability distribution and mathematical expectations. It shows the application of math in decision making. The

course includes applications and data analysis with computations carried out using SPSS.

MADVSTATS: Advanced Statistics
Units: Lec: 3 Lab: 0 **Pre-requisite: MESTATPROB**

This course deals with non-parametric statistics. It covers the topics on test of association such as Spearman Rho, Phi coefficient, Contingency coefficient, biserial, etc and test of differences such as Mann-Whitney U, Wilcoxon, etc. It includes applications and data analysis with computations carried out using SPSS.

MHISTMATH: History of Mathematics
Units: Lec: 3 Lab: 0 **Pre-requisite: 2MATHMWORLD**

This course presents the humanistic aspects of mathematics which provides the historical context and approaches done that led to the present understanding of the mathematical concepts.

MLNALGEBRA: Linear Algebra
Units: Lec: 3 Lanb: 0 **Pre-requisite: MCALSULUS2**

This course provides a basic understanding of vector spaces, including the study of matrices, their properties and matrix operations. It shows the application of matrices in systems of linear equations and linear transformations.

MCALCULUS1: Calculus 1
Units: Lec: 3 Lab: 0 **Pre-requisite:MCADVALGEBRA, MTRIGONOMETRY, MPSGEOMETRY**

This course is an introduction to calculus with analytic geometry. It provides the students with the basic concepts and skills to understand mathematical models for situations involving change or rate of change. These concepts and skills include limits, continuity, derivatives, differentials, indefinite integrals, definite integrals of algebraic function and their applications.

MCALCULUS2: Calculus 2
Units: Lec: 3 Lab: 0 **Pre-requisite:MCALCULUS1**

This course aims to further develop the students' understanding of differential and integral calculus. It covers topics on the methods and techniques of integration, indeterminate forms, and improper integrals of algebraic and transcendental functions

MCALCULUS3: Calculus 3
Units: Lec: 3 Lab: 0 Pre-requisite: MCALSULUS2

This course is a continuation of Calculus II. It aims to provide the students with an understanding of the applications of differentiation and integration in sequences, infinite series, power series, as well as of multiple integration for functions in several variable. Moreover, students will be able to apply these concepts to solve problems.

MSET – THEORY: Logic and Set Theory
Units: Lec: 3 Lab: 0 Pre-requisite: MTRIGONOMETRY

This course is a study of mathematical logic which covers topics such as, propositions, logical operators, rules of replacement, rules of inference, algebra of logic and quantifiers. It also covers a discussion of elementary theory of sets such as fundamental concepts of sets and set operations. Theorems on sets and set operations will be proven using the rules of replacements and inferences in symbolic logic.

MGEOMETRY: Modern Geometry
Units: Lec: 3 Lab: 0 Pre-requisite: MPSGEOMETRY, MSET-THEORY

This course can be considered as an enrichment course after Plane Euclidean Geometry. It discusses the properties and applications of other types of geometries such as finite geometry, non-Euclidean geometry, and projective geometry.

MABSALGEBRA: Abstract Algebra
Units: Lec: 3 Lab: 0 Pre-requisite: MSET-THEORY

This course is a study of basic algebraic structures such as groups, rings, integral domains and fields. It provides a basic understanding of relations such as homomorphism focusing on isomorphism. It aims to enhance the student's skills in constructing mathematical proofs, and develop their symbolic thinking and appreciation of mathematical structures.

MNUMBTHEORY: Number Theory
Units: Lec: 3 Lab: 0 Pre-requisite: MCADVALGEBRA, MSET-THEORY

This course is a study of the properties of numbers and their proofs. It presents the students with different methods of mathematical proving. It focuses on the discussion of the set of integers that covers Unique Prime Factorization, Divisibility Rules, Euclidean Algorithm, Linear Congruence and Linear Diophantine Equations.

MPROBSOLVING: Problem Solving, Mathematical Investigations and Modeling
Units: Lec: 3 Lab: 0 **Pre-requisite: MCADVALGEBRA, MPSGEOMETRY, MSET-THEORY**

This course makes use of the repertoire of mathematical knowledge and skills students have developed over the years to deepen and further enhance their understanding of the subject. It allows the students to explore situations, recognize patterns, formulate, test and justify conjectures, and make generalizations. It aims to develop the students to become logical, critical problem solvers and models who are adept at using varied strategies for proving properties and solving problems. Likewise, it aspires to enhance their communication skills, both oral and written, through written and oral defense of research-based investigatory projects in mathematics. Further, it aims to change the students' image of mathematics as a "toolkit" and impress in them the view that mathematics is a dynamic and growing body of knowledge and processes. The use of graphing calculators and computer algebra systems is highly encouraged.

MTTL2MATH: Technology for teaching and Learning 2 (Instrumentation and Technology in Mathematics)
Units: Lec: 2 Lab: 1 **Pre-requisite: ETECHTLEARN1**

This course is designed to develop the students' skills in designing instructional materials and in using technology to facilitate the learning of mathematical concepts in a secondary math class. It intends to familiarize the future teachers with various math instructional tools including different application software which they can use in the future. The aim of this course is to present and produce a wide variety of mathematical instruments which the students can later use in teaching their classes.

MRESMATH1: Research in Mathematics 1 and 2
Units: Lec: 3 Lab: 0 **Pre-requisite: 3rd year standing**

This course aims to prepare prospective mathematics teachers to undertake an undergraduate research project. It gives prospective teachers the opportunity to conduct researches that address problems, issues, and concerns in mathematics teaching and learning. It showcases their research skills through the application of diverse mathematical content and processes learned through the years of schooling. This is done in two stages: stage 1 is the writing of the proposal and stage 2 is the writing and defense of the final research paper. The use of computer software such as the Statistical Package for the Social Sciences (SPSS) and the like is highly encouraged.

MTEACHMATH: Principles and Strategies of Teaching Mathematics
Units: Lec: 3 Lab: 0 **Pre-requisite: MTTL2MATH**

This course deals with the philosophical foundations of mathematics as well as the principles and strategies in teaching mathematics. It includes lesson planning and microteaching.

MASSESSMATH: Assessment and Evaluation in Mathematics
Units: Lec: 3 Lab" 0 Pre-requisite: MADVSTATS

This course deals with traditional and authentic assessment methods of evaluating mathematics learning. It covers the purposes of instruction and assessment, relationships of assessment to content and performance standards, and includes discussions on issues and trends in the context of assessment in mathematics.

MTTL2MATH: Technology for Teaching and Learning 2 –Instrumentation and Technology in Mathematics
Units: Lec: 3 Lab: 0 Pre-requisite: ETECHLEARN1

TTL is a 3-unit course which focuses on the application, design, production, utilization and evaluation of Information and Communications Technology (ICT) materials for teaching and learning in Mathematics Education Programs. The major requirement for this course is an ICT-integrated and Project-based Learning Plan aligned to the K to 12 Curriculum. All the learning activities and course requirements will revolve around th student-teacher developed learning plan.
Prerequisites: TTL1, Assessment of Learning 1&2, Principles of Teaching courses