GRADUATE SCHOOL
SILLIMAN UNIVERSITY
DUMAGUETE CITY

Master of Arts in Teaching Mathematics

(Revised Curriculum effective SY'92-93)

The M.A.T. (Mathematics) program is intended primarily for teachers or would be teachers of elementary or secondary mathematics whose undergraduate preparation is a B.S. in elementary Education (Major in Mathematics). It is for teachers seeking to upgrade their teaching proficiency in mathematics through a more extensive exposure to a wide variety of "Mathematics Content" and teaching methods.

OBJECTIVES OF THE PROGRAM

The main objectives of the M.A.T. Mathematics program is to meet the needs of mathematics teachers of elementary and secondary level for public and private schools, specified by:

1. Providing a more thorough background on the theory and content of mathematics to give a firm and broader base of the field.
2. Upgrading teaching competence in the light of modern approaches to learning and teaching mathematics and undertaking research.
3. Exposing them to opportunities relevant to mathematics needed by elementary and secondary school teachers and eventually fostering continuous self-education.

COOPERATING UNITS

The Graduate administers the M.A.T. Math program with the cooperation of the college of Education and the Department of Mathematics of the College of Arts and Sciences.

ADMISSION REQUIREMENTS

All applicants for admission into the M.A.T. Math program must be holders of bachelors degree, preferably a BS in Education or a BS in Elementary Education major in Mathematics. He must have completed college level courses in algebra, statistics, geometry and mathematics analysis, side from the required education courses.

CURRICULUM

Basic Courses: 9 units

Ed 210	Classroom Learning
Ed 120	Principles of Research
Ed 127	Psychological, Sociological Foundation of Ed

Undergraduate Pre-requisites:

Ed 81	Secondary School Method/Ed 35 Elem. Math Methods

Major Field of Concentration: 15 units

A. Elementary/Secondary:

Math 101	Structure of Mathematics (Math 1-Modern Math)
Math 103	Foundations of Mathematics (Math 1-Modern Math)
Math 104	Concepts of Geometry (Math 13-Intro to College Geometry)
Math 113	Linear Algebra and Matrix
Math 111	Statistical Analysis 1 (Math 16-Applied General Stat with Demography)
Math 204	Seminar workshop in Math including History and Philosophy of Math.

B. Secondary:

Math 131	Modern Algebra I (Math 23-Intro to Modern Algebra)
Math 132	Modern Algebra II
Math 147	Advanced Calculus I (Math 25, 26 – Mathematics Analysis I, II)

Cognates: 6 units

Educ 129	Teacher Supervision and Evaluation Methods
Educ 122	Philosophy of Education with New Constitution
Educ 180	Introduction and Principles of Guidance

Thesis: 6 units

Educ 250	Thesis Writing

Course Description

- **101 Structure of Mathematics (3 units):** This course is designed to provide the elementary and secondary school teachers with a foundation in the structure of mathematics. Included are discussions of sets, relations and properties of natural numbers, integers, rational and real numbers, as well as selected topics from theory of numbers, algebra and geometry. The nature of the proofs will be demonstrated through selected exercises.
- **103 Foundations of Mathematics (3 units):** Axiomatic method, principles of logic, set theory, infinite sets, plane axioms, including a mathematical induction, real number system, selected viewpoints on foundation. Prerequisite: Considerable mathematical maturity.
- **104 Concepts of Geometry (3 units):** This course involves geometry as a mathematical structure; basic concepts of Euclidean, non-Euclidean geometries, concepts of projective geometry as an axiomatic system; contribution to geometry of modern mathematical method. Prerequisite: Math 13.
- **111 Statistical Analysis (3 units):** Probability with statistical analysis. Discrete probability, set theory, permutations and combinations, binomial coefficients, chi-square, product moment correlations, F and T tests.
- **113 Linear Algebra and Matrix Theory (3 units):** Vectors and vector spaces, linear independence and spaces, subspaces and direct sums, linear transformations, matrices, eigen values and eigen vectors, canonical forms, determinants, real quadratic forms, inner-product spaces. Gram-Schmidt orthogonalization, trade and transpose.
- **131 Modern Algebra I (3 units):** Set theory, relations, functions and mathematical induction. Groups: permutation groups, homomorphisms, sub-groups, normal sub-groups and factor groups. Language theorem, cyclic groups. Prerequisite: Math 40.
- **132 Modern Algebra II (3 units):** Rings: Integral domains, quaternions as a division ring, homomorphisms, ideals, factor rings. Fields: axioms and elementary theorems. Finite fields: Solutions of polynomial equations, extensions of fields.
- **147 Advanced Calculus (3 units):** Point set theory, continuity, uniform continuity, convergence, uniform convergence.
- **204 SEMINAR WORKSHOP (3 units):** Involves production of teaching devices such as duplication of visual instructional materials, innovations of teaching strategies, organization of course outline, collection of reading resources, making action program, bulletin board display and exhibits of teaching materials.
- **211 HISTORY AND PHILOSOPHY OF MATHEMATICS (3 units):** Provides a survey of the development of mathematics from primitive man; the study of the mathematics of antiquity, the learning from experience and trial-and-error, primitive logic in the early history of Babylinia and Egypt; the Greco-Roman culture and their influence upon mathematical development; the Hindu-Arabic and European Aspects, and the mathematical philosophy and activities in the modern era.