

### Mission Statement

We are a Catholic institution of learning dedicated to advancing the frontiers of knowledge in the theoretical and applied fields through quality graduate education that is comprehensive and responsive to the needs of society.

We are committed to the formation of scholars and high-quality professionals who are ethical, competent, compassionate, and committed to the service of their respective professions, the church, the nation, and the global community.

### Vision Statement

We envision a Graduate School that stands for excellence and innovation and that is globally recognized for its distinct degree programs and quality research outputs.

### Goals and Objectives

The Graduate School commits itself to develop:

1. competent professionals who, inspired by the ideals of St. Antoninus of Florence, promote excellence in the production, advancement, and transmission of specialized knowledge and skills in the sciences, the arts, and community service;
2. scholarly researchers and creative thinkers who, kindled by St. Thomas Aquinas' ardour for truth, aspire to become founts of intellectual creativity and, in their quest for quality research, are proficient and critical in assessing and communicating information in various fields that impact the professions, the church, the nation, and the global community;
3. professional Christian leaders who, touched by St. Dominic de Guzman's apostolic fire and warmed by Mary's motherly care, articulate ethics and truth, high level of moral maturity in resolving issues and promoting social justice and compassion for the poor, and care for the environment;
4. globally engaged citizens who, with ardent advocacy for life, promote a deeper understanding of tolerance and justice as well as linguistic, religious, and cultural diversities as a result of precise evaluation of modern problems and inquiries;
5. committed scholars who, nurtured by the dogmas of Christian faith and values, are dedicated to the pursuit of truth through the promotion of an intellectual culture that values academic rigor and freedom of scientific investigations; and
6. lifelong learners who, empowered by St. Antoninus of Florence's zeal for learning, are committed to the advancement of a higher culture through a continuous search for intellectual inquiries and new knowledge as well as faithfulness to Catholic intellectual traditions.

### Program Intended Learning Outcomes (PILO)

Upon successful completion of the MS major in Mathematics Education Program, the graduate will be able to:

1. Demonstrate the conveyance of mathematical concepts in a clear concise manner in both written and oral form
2. Demonstrate critical and creative problem solving in mathematics through application of mathematical techniques and research activities in the academe
3. Demonstrate application of mathematical concepts to address relevant issues in environmental protection, conservation, utilization of natural resources for sustainable and ethical use.
4. Demonstrate engagement in conducting individual and group oriented activities in the field, classroom or laboratory setting
5. Demonstrate generation of new knowledge in the field of mathematics through research and analysis of given data and information
6. Demonstrate the continuous search for knowledge through scientific inquiry and research in the field of mathematics

## Curriculum

### Master of Science major in Mathematics Education

#### PRE-REQUISITE COURSES: 6 UNITS

#### GS 500 - St. Thomas and Critical Thinking

As the philosophical foundation of Research Methodology, it is a study of the principles of and skills in critical thinking according to St. Thomas Aquinas in the three areas of mental cognition: simple apprehension, judgment, and reasoning; and of common fallacies towards the acquisition of the art of argumentation.

#### GS 501 - Research Methodology

The student is introduced to research concepts relevant to Biology Education. Discussions center on how to prepare a thesis emphasizing choice of title, statement of the problem, sources of data, analysis and evaluation of information gathered among others. Course output is a thesis proposal. Reviews the UST-GS Thesis Writing Guide Booklet.

#### CORE COURSES: 9 UNITS

#### EDM 702 - Psychology of Human Growth and Development

The growth stages in human life, the dimensions of growth and the learning tasks to be developed at each stage.

#### EDM 705 - Philosophy of Education

This course deals with the study of major philosophies of education that have significantly influenced educational practices. It studies questions that concern philosophers of education and tries to define clearly the philosophical terms that assist in the understanding of educational theories. The students are expected to develop the ability to practice philosophical thinking about educational issues. There will be a two-way approach, on one hand, to trace the philosophical base of some educational practices and on the other hand, to discover the consequences of a philosophical thought in the practice of education. To study the branches of philosophy that provide education its foundations. At the outset, an analysis of the reality of education will be made based on St. Thomas Aquinas; philosophical thinking.

#### EDM 708 - Trends and Practices in Curriculum Development

A study of concepts, foundations, theories, principles, competing models, paradigms, and processes underlying the technical and practical aspects of curriculum planning. Engages students in curriculum planning procedures that allow them to build theories, create visions, and manage strategies for attaining them in the light of both fundamental and contemporary curriculum thoughts and action and institutional changes. Significant researches and fundamental issues, problems, concerns and future directions in the field of curriculum planning and changes are analyzed and synthesized.

#### EDM 710 - Instructional Materials Preparation & Instrumentation

A theory and practice-based course that deals specifically with both macro and micro level instructional designs in both educational and training settings. Focus is on the development of competencies in the four components: analysis, design, development and evaluation.

#### EDM 711 - Educational Diagnosis

The assessment of instructional results to identify learner strengths and disabilities: analysis of assessment results and corrective measures.

#### EDM 715 - Instructional Design

The politics of education in relation of the community; analysis of the input-throughput-output relationships between educational institutions and their service communities.

#### EDM 720 - Issues & Trends in Science Education

Updates and current concerns in science education.

#### MAJOR COURSES: 15 UNITS

#### MATH 610 - Statistics & Probability

Elements of descriptive and inferential statistics, frequency distributions, graphic representations, measures of central tendency and variability, techniques for handling counted data, normal probability curve, testing significance of difference between means, basic indices of correlation and experimental design.

#### MATH 620 - Linear Algebra and Matrix Theory

Linear equations, vector spaces, linear dependence, bases and coordinate systems, linear transformation and matrices, canonical form of matrices, similarity and eigenvalue reduction of quadratic forms.

#### MATH 630 - Ordinary Differential Equations

First Order and Second Order differential equations; Bessel's equation; Legendre's equation; Hypergeometric equation; Boundary Value problems.

#### MATH 635 - Numerical Analysis

Difference operators; iteration for systems of equations; linear difference equations; divided differences; interpolation; numerical integration; numerical solutions of differential equations; computerized methods in numerical analysis.

#### MATH 720 - Abstract Algebra

Algebraic systems and their morphemes including groups, rings, fields, modules, and categories.

#### MATH 774 - Calculus

This involves a study on variable functions - polynomial, rational, algebraic, exponential and logarithmic - with the associated algebra and geometry. The concepts of limits, continuity, derivative, extreme, curve plotting, Mean Value Theorem, and integrals are developed and applied.

#### MATH 775 - Special Topics

Updates and current topics in mathematics education.

**COGNATE SUBJECTS: 3 UNITS**

Any related course that has substantial bearing on Thesis.

**OTHER REQUIREMENTS**

- Written Comprehensive Examinations (WCE)
- TW I - 3 units (Thesis Proposal)
- TW II - 3 units (Research Colloquium)
- TW III - 3 units (Thesis Defense)

**Total = 42 Units**

**UST Graduate School Administration  
Officials and Faculty Set-up**

MARILU R. MADRUNIO, Ph.D.  
*Dean*

FR. JOSÉ ANTONIO E. AUREADA, O.P., S.Th.D.  
*Regent*

ALEJANDRO S. BERNARDO, Ph.D.  
*Faculty Secretary*

GRECEBIO JONATHAN D. ALEJANDRO, Dr.rer.nat.  
*Director for Graduate Research*

MARCELA J. LEUS, Ed.D.  
*Program Lead*  
*Education, Curriculum & Instruction,*  
*Library & Information Science*

**PROFESSORIAL STAFF**  
Fr. Jose Antonio Aureada, S.Th.D.  
Allan De Guzman, Ph.D.  
Amelita Gaerlan, Ph.D.  
Marcela Leus, Ed.D.  
Aleli Sevilla, Ph.D.  
Emily Tan, Ph.D.  
Ma. Carlota Decena, Ph.D.

**SUMMARY OF COURSE REQUIREMENTS**

Requirements	M.S. units
Pre-requisites	6
Core Courses	9
Major Courses	15
Cognate	3
Written Comprehensive Examinations	---
Thesis Writing I	3
Thesis Writing II	3
Thesis Writing III	3
<b>TOTAL</b>	<b>42</b>

**SCHOOL CALENDAR**

The University of Santo Tomas follows an Academic Year Calendar of two (2) terms and a special term.

Special Term: June - July

**For further information, please call,**  
**Tele-Fax: (632) 740-9732 or**  
**Tel. No. (632) 786-1611 loc 8247; 731-5396**  
**Web-<http://graduateschool.ust.edu.ph>**  
**E-mail: [odgs@mnl.ust.edu.ph](mailto:odgs@mnl.ust.edu.ph)**

**or write to:**  
**The Dean/Faculty Secretary**  
**UST Graduate School**  
**España, Manila, Philippines 1008**



University of Santo Tomas  
THE CATHOLIC UNIVERSITY OF THE PHILIPPINES  
MANILA, PHILIPPINES  
**The Graduate School**

**Master of Science major in**  
**MATHEMATICS**  
**EDUCATION**