

### **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:

- 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;
- scholarly researchers and creative thinkers who, kindled by St. Thomas Aquinas' ardour for truth, aspire to become fountains 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;
- 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;
- 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;
- 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
- 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.

### **APPLICATION PROCEDURES**

- A. Application for admission to the UST Graduate School is until October 15 for October enrollees, April 5 for Summer enrollees and May 25 for June enrollees.
- B. Application forms for Admission are available at the UST Graduate School, UST Admissions Office & at the UST Graduate School Web Site— <http://www.ust.edu.ph>

### **REQUIREMENTS:**

Certified true copy of Transcript of Records, one (1) colored passport size, recent photo (if any) document(s) attesting to passing a Bar/Board Exam, or being a scholar of any agency.

Two (2) Referral Forms: One(1) for the current (immediate) superior (or Dean, in the case of a school); and the other, for the professor in one specialization (major) subject.

### **For Foreigners:**

**All of the above and;**

TOEFL English Proficiency and Student Visa Requirements.

### **ADMISSION REQUIREMENTS**

1. Bachelor's Degree in Medical Technology or related courses with a general average of at least 2.0/85% or B.
2. Complete accomplished application and referral forms.

### **CURRICULUM**

#### **MASTER OF SCIENCE IN MEDICAL TECHNOLOGY**

### **PRE-REQUISITE SUBJECTS: 6 UNITS**

#### **GS 500 – St. Thomas and Critical Thinking**

ST. THOMAS ON CRITICAL THINKING is a course on Aristotelian and Symbolic Logic that focuses on the fundamental laws of thought. It provides guiding principles in order to enhance critical and reflective skills that would facilitate correct and responsible judgment and reasoning. It gives an opportunity to be in control of one's thinking activities.

#### **GS 501 – Research Methodology**

The Course introduces the student to research concepts relevant to the Natural Sciences. Discussions center on the nature and process of scientific inquiry; the ethical and social responsibilities of the research scientist; and the skills required to do meaningful research in the Natural Sciences. The course also guides the student in the preparation of a scientific review paper or a research project.

### **CORE SUBJECTS: 9 UNITS**

#### **MT 602 – Biostatistics**

A competency-oriented course which emphasizes both the theoretical and the practical aspects of biostatistics. This course presents fundamental concepts in descriptive biostatistics, exploratory data analysis, and statistical inference, focusing on probability and analysis of one, two, three or more samples. Topics include discrete and continuous probability models; expectation and variance; central limit theorem; inference, including hypothesis testing and confidence for means, proportions, and counts; maximum likelihood estimation; sample size determinations; elementary non-parametric and parametric methods; graphical displays; and data transformations.

#### **MT 603 – Philosophy of Medical Technology**

The course deals with philosophy of medical technology as well as the contemporary issues confronting the individual medical technologist and his professional organization, legislation, education, and international and national recent development in medical technology, including social responsibility and accountability, and biomedical ethical concerns.

#### **MT 604 – Advanced Biochemistry**

This course covers in detail the molecular basis of life, which includes the chemistry of biomolecules, structure function relationship, transformation of matter and energy, storage of genetic information, accession and manipulation.

The course provides the basic concepts in biochemistry and how these concepts can be applied in the biological sciences, health and medicine, agriculture, food and related industries.

### **MAJOR SUBJECTS: 15 UNITS**

#### **MT 701 – Advanced Hematology**

It is an in-depth study of the laboratory diagnosis and treatment of the common disorders of red blood cells, white blood cells and homeostasis. Each disease state will be discussed in terms of underlying pathophysiology, clinical features, which suggest the diagnosis, the use of state-of-art laboratory tests in the diagnosis and differential diagnosis of the conditions and the current management.

#### **MT 702 – Advanced Medical Bacteriology**

A study of bacteriologic agents associated with infectious disease syndromes and procedures for the detection, identification and susceptibility testing of etiologic agents. Emphases are given to new technology, new bacterial agents of infectious diseases, and the evolving interest in public health and preventive medicine.

#### **MT 703 – Advanced Medical Parasitology**

A competency-oriented course which emphasizes both the biological and medical aspects of parasites of medical importance.

#### **MT 704 – Medical Mycology and Virology**

A study of morphologic and biologic characteristics of mycological and viral agents of disease. It also includes a study of diagnostic methods, transmission, epidemiology, pathology and prevention from infection of each infectious agent.

#### **MT 705 – Advanced Blood Banking**

It is the study of recent advances in blood banking theory, technical practice considerations and regulatory guidelines. Certain clinical situations will be discussed in detail including transfusion reactions, hemolytic anemia and transfusion-transmitted infections.

#### **MT 706 – Advanced Serology & Serological Methods**

It is the study of current and state-of-art serologic methods in the diagnosis of bacterial, parasitologic, viral and mycological diseases as well as autoimmune and oncologic disorders.

#### **MT 707 – Advanced Immunology**

It approaches the conceptual and technical advances in immunologic principles and techniques which can be applied to microbial infections, hypersensitivity, organ transplantation, autoimmune diseases and immunodeficiency disorders.

#### **MT 708 – Epidemiology**

A competency-oriented course which emphasizes both the theoretical and the practical aspects of epidemiology. The course covers application of epidemiologic procedures to the understanding of the occurrence and control of conditions such as infections and chronic diseases, mental disorders, community and environmental health hazards, accidents, and geriatric problems.

#### **MT 709 – Advanced Cytologic Techniques**

An in-depth study of the current methods of specimen collection, preparation, staining, and microscopic examination. It also includes study of basic disease process and correlation of cellular and tissue pathology.

#### **MT 711 – Laboratory Management (Theory and Practice)**

A study of principles of administration, organization and management with emphasis on the operation of a clinical laboratory. It also includes discussion of problems in laboratory

management including the legal and financial aspects of clinical laboratory operations.

**MT 712 – Advanced Clinical Toxicology**

This course will provide a systematic evaluation of the many classes of toxicological agents with an emphasis on the molecular mechanisms underlying their toxicity. This will also demonstrate physiologically based pharmacokinetic modelling used to solve present day problems in toxicology. This exercise is designed to help the student to understand the general principles that are important to toxicologists in their quest to understand the biological effects of these toxic chemicals (xenobiotics). Identify, recognize and assay various cases and incidences of poisoning via instrumentation. Recognize the medical technologist’s critical and sensitive role in delivering accurate and timely analysis of biological samples with applications in diagnosis, therapy, research and medico-legal cases.

**MT 713 – Advanced Clinical Microscopy**

This course will deal with the advances in the field of clinical microscopy including analysis of urine and other body fluids. Current technologies used in the analysis and in the detection of pathophysiology will be elaborated.

**MT 714 – Experimental Methods and Instruments in Clinical Chemistry**

This course focuses on advanced instrumentation and methodologies used in Clinical Chemistry with particular emphasis on optical instruments, electroanalytical instruments, chromatography, immunoassays, and molecular techniques. Application of these instrumentations will also be discussed.

**MT 715 – Clinical Endocrinology**

This course will cover the endocrine system and its hormonal products, including hormone producing cells, synthesis and modification of the hormones, release and transport, hormone receptors and mechanisms of hormone action, and effects of these hormones on target cells and on body metabolism and physiological processes. This will also tackle diseases associated with abnormal levels of hormones and the methods used to detect these diseases.

**MT 716 – Clinical Enzymology**

This course will focus on the clinically relevant enzymes. It will cover the physical, structural, and functional characteristics/properties, nomenclature, classification, and biochemical processes. Differentiation, analysis, detection, enzyme assays and clinical application of these enzymes will be given importance. The course will also tackle diseases associated with such enzymes.

**MT 717 – Infectious Diseases**

This course will focus on occurrences of infectious diseases. Case studies of important disease outbreaks, investigations, disease surveillance, laboratory diagnosis, dynamics of transmission, and assessment of effectiveness of intervention will be covered.

**COGNATE COURSES: 3 UNITS**

**MT 718 – Food Microbiology**

This course will focus on microorganisms associated naturally with foods and those responsible for spoilage and thus affects humans. Conditions favoring growth, death and survival of these microorganisms, and the immediate and long term effects of contaminated foods in humans will be discussed. Techniques to identify and isolate these microorganisms will also be dealt with.

**MT 719 – Clinical Nutrition**

This course is designed to emphasize the importance of nutrition in maintaining health and wellness. The effectiveness of the therapeutic diet as related to specific diseases will be explored, as well as acquaintance with the nutritional assessment tools of individuals.

**MT 720 – Special Topics**

**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

ALETH THERESE L. DACANAY, Ph.D.  
Program Lead  
Pharmacy & Medical Technology

**PROFESSORIAL STAFF**

- Pia Marie S. P. Albano, Ph.D.
- Jovencio G. Apostol, Ph.D.
- Supachai Basit, Ph.D.
- Maria Ruth P. Cortel, Ph.D.
- Agnes L. Castillo, Ph.D.
- Aleth Therese L. Dacanay, Ph.D.
- Ma. Frieda Z. Hapan, Ph.D.
- Delia C. Ontengco, Ph.D.
- Librado Santiago, Ph.D.
- Oliver B. Villaflores, Ph.D.
- Mafel C. Ysrael, Ph.D.

**Summary of Program Requirements**

| Degree Requirements        | units     |
|----------------------------|-----------|
| Prerequisite Courses       | 6         |
| Core Courses               | 9         |
| Specialization Courses     | 15        |
| Cognate Courses            | 3         |
| Written Comprehensive Exam | --        |
| Thesis Writing I           | 3         |
| Thesis Writing II          | 3         |
| Thesis Writing III         | 3         |
| <b>TOTAL</b>               | <b>42</b> |



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

**MASTER OF SCIENCE IN**  
**MEDICAL TECHNOLOGY**