Medical Laboratory Science

Program Handbook

2024-2025

Dear Medical Laboratory Scientist Student,

Welcome to the Medical Laboratory Science (MLS) program at Thomas University! It is a pleasure to count you as one of our talented and committed students completing your educational journey to becoming part of the proud community of Laboratory professionals.

As you begin what will be a challenging journey, you may feel overwhelmed and overworked as you balance educational expectations with your work/life balance. Take heart and keep focused on your goals. Please remember that the MLS Faculty are here to help you at every step of your journey.

The MLS Program Handbook has been developed to assist you with your education. It is important to read and become familiar with the information presented in this handbook. Please refer to this as a main source of information regarding operational policies and procedures of the program. It serves as a companion to the Clinical Handbook you will receive before your clinical semester.

We wish you success as you continue your educational experience!

Sincerely,

Thomas University Medical Laboratory Science Department Faculty

Table of Contents Handbook

Handbook Overview

The MLS Program Handbook has been developed to assist you with your education. It is important to read and become familiar with the information presented in this handbook. Please refer to this as a main source of information regarding operational policies and procedures of the program. The Thomas University (TU) Catalog, website and Student Handbook contain additional information on all services available at TU and should be used by students to obtain full knowledge of all policies and procedures.

Medical Laboratory Science courses utilize Canvas, Thomas University's learning management system. This program is used to deliver lectures (recorded), messages, assignments, quizzes, and instructional materials. All quizzes and exams are proctored via an online proctoring service called Honorlock. Once accepted, you will receive important information regarding your access to Canvas and your student accounts.

This program handbook does not constitute a contract between Thomas University and its students, applicants for admission, or with any other person. The MLS program faculty reserves the right to change, without notice, any statements in this handbook. Information on changes will be available to students in a reasonable and timely manner by the MLS Program Director. Although the MLS program faculty members have made every reasonable effort to attain factual accuracy in this handbook, no responsibility is assumed for editorial, clerical, or printed errors or mistakes. The MLS program faculty have attempted to present information that, at the time of preparation for publishing, most accurately describes the program policies. If there is a conflict between the MLS Program Handbook and the University's Student Handbook or University Catalog regarding university issues, the University Handbook and Catalog shall prevail.

Completion of the MLS program at Thomas University does not guarantee employment for graduates. However, successful completion of the MLS program and the competencies therein will make the student eligible to sit for several certification exams and be competitive in the current job market. Graduation from the program is not contingent upon passing an external certification exam.

Accreditation

Thomas University is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award associate, baccalaureate, master's and education specialist degrees. Contact the Southern Association of Colleges and Schools Commission on Colleges 1866 Southern Lane, Decatur, GA 30033 or call 404-6794500 for questions about the accreditation of Thomas University.

The Medical Laboratory Science program is accredited by the National Accrediting Agency for Clinical Laboratory Services (NAACLS), 5600 N. River Rd. Suite 720, Rosemont, IL 60018-5119, (telephone:773-714-8880), URL: https://naacls.org/

Thomas University Mission Statement

Thomas University is the school of choice for students in undergraduate and graduate programs to prepare for successful careers and responsible leadership in a rapidly changing and complex world. The faculty and staff value students' individual strengths, capabilities, and willingness to succeed, providing the means by which they will achieve personal and professional transformation.

MLS Program Mission Statement and Philosophy

Mission

The mission of the Thomas University Medical Laboratory Science program is to produce competent and professional laboratory scientists through rigorous didactic and technical coursework.

Philosophy

The MLS program fosters medical and scientific endeavor and promotes the concept of change as related technology evolves. We believe that quality education is the foundation of quality healthcare and nurtures the spirit of involvement in lifelong professional learning. The program will strive to ensure MLS graduates employ expertise and high standards of ethical conduct to guide patient care and medical decisions throughout various healthcare settings in their communities.

Along with the assistance of its clinical affiliate laboratories, the MLS program is committed to providing quality didactic and clinical instruction, which encompasses the cognitive, psychomotor, and affective domains of learning to prepare its graduates to work upon career entry as competent medical laboratory scientists in health care facilities. The program is committed to meeting the employment needs of medical laboratories and to providing quality continuing education to laboratory professionals in our service area and beyond.

Program Goals

The purpose of the Thomas University MLS program is to provide educational opportunities to individuals that will enable them to obtain the knowledge, skills, abilities, and attitudes necessary to succeed as medical laboratory scientists. The program strives to achieve and produce graduates that will:

1. Demonstrate the profession's code of ethics and consistently act within those standards during interactions with fellow classmates and working professionals in the clinical laboratory setting.

2. Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem-solving skills.
3. Achieve entry-level competencies of a medical laboratory scientist by testing biological samples using current technology to generate accurate, quality assured laboratory results.
4. Gain relevant professional employment or continue their education within one year of graduation from the program.
5. Utilize critical thinking skills to assess and problem-solve laboratory data as applied to patient diagnoses.
6. Prepare students for the national certification examination for the profession.
7. Prepare graduates to function as competent practitioners in the medical laboratory science field dedicated to maintaining high ideals and standards as a member of the healthcare team.

Essential Functions of a Medical Laboratory Scientist

Important attributes for success of program graduates are analytical thinking, problem solving, and the ability to apply technology to the work requirement. Students in the MLS program must have the capability to meet the established technical and essential functions. These essential functions are required to ensure that students can participate and potentially be successful in all aspects of the program. Successful program completion and subsequent field employment demands that students meet the following requirements with or without reasonable accommodations.

Observation (Vision)

The MLS Student must be able to:

- Observe laboratory demonstrations of specimens, techniques, and instruments.
- Characterize the color, consistency, and clarity of biological specimens or reagents
- Use a microscope to identify and find differences in structure and color (hue, shading and intensity) in microscopic specimens.
- Read and comprehend charts, thermometers, computer screens, text, numbers, and graphs displayed in print and on a video monitor.

Movement

The MLS Student must be able to:

- Remain continuously on task for several hours while standing, sitting, moving, lifting, and/or bending. Examples: stand, skit, and/or walk for extensive periods of time while operating instrumentation in several departments.
- Move from area to area freely and safely and maneuver in small spaces with full range of motion, manual and finger dexterity, and hand eye coordination. Examples: operating more than one instrument at a time and trouble shooting instrumentation
- Provide safe and effective patient care and operating equipment with sufficient gross and fine motor abilities. Example: calibrate and use equipment, life and operate equipment with necessary strength and dexterity, utilize both hands for gripping and doing precision work.
- Travel to clinical laboratory sites for practical experience.
- Reach laboratory benchtops and shelves, patients lying in a hospital bed, or patients seated in specimen collection furniture.
- Use an electronic keyboard to operate laboratory instruments and calculate, record, evaluate and transmit data.

Communication

The MLS Student must be able to:

- Effectively communicate and interact with others in spoken and written English. Examples: explain procedures, listen attentively, communicate problems verbally and/or written, document and interpret instructions.
- Read and comprehend technical and professional materials (textbooks, journal articles, handbooks, and procedure manuals).
- Converse clearly, effectively, confidentially, and sensitively with patients regarding laboratory test orders and specimen collection instructions.

Intellect

The MLS Student must be able to:

- Sufficiently utilize critical thinking skills for clinical judgement. Examples: identify cause and effect relationships in clinical situations, evaluate patient or instrument responses, synthesize data, draw sound conclusions, etc.
- Exercise sufficient judgement to recognize errors and take appropriate corrective actions.

Behavior

The MLS Student must be able to:

- Interact with individuals, families, and groups from a variety of social, emotional, cultural, and intellectual backgrounds. Examples: establish rapport with patients and colleagues. Use therapeutic communication (attending, clarifying, coaching, facilitating, teaching), and function (consult, negotiate, share) as part of a team.
- Present professional appearance and implement measures to maintain own physical and mental health, and emotional sustainability. Examples: work under stressful conditions and irregular hours, be exposed to communicable diseases and contaminated body fluids, react calmly in emergency situations, and show concern for others.
- Organize work and manage the use of time in order to complete technical tasks with realistic time limits.
- Effectively use their intellect to exercise appropriate judgement in a distracting environment under stressful circumstances.
- Be flexible and creative and adapt to professional and technical change.
- Be honest and forthright about errors.
- Adapt to working with unpleasant biological specimens.
- Be able to critically evaluate their own performance, accept constructive criticism, and be responsible for improving performance.

- Be compassionate and ethical.

If you are not certain that you will be able to meet these requirements, or know of anything that, currently or in the future, might affect your ability to fulfill these functions, please contact The Student Disability Support Services Office to discuss your individual situation and/or request a specific accommodation. URL: https://www.thomasu.edu/student-life/student-success/

MLS Entry Level Competencies

The following is from the "National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) Standards for Accredited and Approved Programs" (Rev. 2023)

At entry level, the medical laboratory scientist will possess the entry level competencies necessary to perform the full range of medical laboratory tests in areas such as Clinical Chemistry, Hematology/Hemostasis, Immunology, Immunohematology/Transfusion Medicine, Microbiology, Urine and Body Fluid Analysis, Laboratory Operations, and other emerging diagnostics. They will play a role in the development and evaluation of test systems and interpretive algorithms.

The medical laboratory scientist will have diverse responsibilities in areas of analysis and clinical decision-making, regulatory compliance with applicable regulations, education, and quality assurance/performance improvement wherever laboratory testing is researched, developed, or performed.

At career entry level, the medical laboratory scientist will have the following professional competencies. They will have the ability to:

A. Comply with government regulations and accreditation standards as they pertain to medical laboratory science;
B. Follow established procedures for general laboratory safety, biohazard containment, and waste disposal;
C. Apply principles of data safety and security for laboratory and hospital information systems
D. Demonstrate professional and ethical conduct and interpersonal communication skills with diverse stakeholders, sufficient to serve the needs of patients, the public, and members of the health care team;
E. Recognize and act upon individual needs for continuing professional education and development as a function of growth and maintenance of professional competence;

F. Establish effective interprofessional working relationships with other health care professionals, demonstrating comprehension of and respect for their job responsibilities and patient care;
G. Recognize and respect the importance and value of collaborating with a diverse workforce;
H. Respect and promote a workplace culture of inclusivity, diversity, equity, and accessibility;
I. Apply principles of quality assurance to assure validity and accuracy of laboratory data generated;
I. Exercise principles and practices of administration and supervision of diverse teams and inclusive collaboration as applied to medical laboratory science;
J. Employ educational methodologies and terminology sufficient to train/educate users and providers of laboratory services;
K. Utilize principles and practices of clinical or research study design, equity and data bias, study implementation, and dissemination of results

Program Information

Program Admission

Thomas University has a rolling admission process and accepts students at any time throughout the year in order for students to enroll in the next available semester. Only complete application files will be considered.

Students must first be accepted to Thomas University and submit all documents and information required by the admissions department (outlined below). Qualified applicants will then be sent to the MLS Program Director for program acceptance. Program requirements can be found below for each program route. Formally accepted MLS candidates will receive an acceptance letter from admissions and/or the MLS program director. Once you receive this letter, you should:

1. Confirm your acceptance in the MLS program.
2. Contact the MLS program advisor to determine the curriculum plan for program completion.

It is recommended to complete the degree requirements within 3 years, as studies show students have a better retention rate of material for the certification exam. However, TU recognizes that this timeline may not work for all individuals, especially those working full time with other life commitments. We strive to meet each student where they are and will work out a progression that works best for each student's situation.

ROUTE A: MLT TO MLS 2+2 ONLINE PROGRAM

This program is a bridge program designed for the medical laboratory technician. A student must possess an Associate of Applied Science or an Associate of Science Degree from a NAACLS accredited MLT program and hold national MLT certification. Students will be accepted each semester to begin a structured curriculum including online courses and competency-based clinical experience. A course alternate may be available for eligible students to have their clinical experience waived due to recent graduation or sufficient work experience at the Program Director's discretion. These courses will provide the skills needed to meet entry level competence as a Medical Laboratory Scientist. Students graduating with the B.S. degree from Thomas University in MLS are eligible to sit for the national certification examinations in Medical Laboratory Science. Completion of the degree is not contingent on passing the exam.

Admission Requirements for Route A:

1. Associate degree from a NAACLS accredited MLT (Medical Laboratory Technology) program.

2. Transfer GPA of 2.75 or higher.
3. National MLT Certification. *
4. On-going employment in a medical laboratory that meets appropriate testing requirements and is willing to serve as a clinical site. **We do not locate clinical sites for the 2+2 students.**

Notes: *Conditional status may be granted while awaiting employment and/or taking the MLT certification exam for a max of two semesters. After two semesters, students will be diverted to the biomedical laboratory science program if interested in continuing their education.

Once accepted, students are required to submit the following documents in their MLS 350 Orientation to Online MLS Course:

1. A Statement of Support from their employer or a qualified laboratory where they intend to complete their clinical practicum.
2. Clinical fact sheets for the laboratory where they are employed and intend to complete their clinical practicum.
3. Drug Screen and Background Check Waiver if currently employed in a qualified laboratory. If not currently employed, a drug screen and background check must be completed.
4. The signature page for this handbook.
5. Physical exam documentation from within the last 6 months
6. Immunization record to include Hepatitis B series or deferral form and verification of a flu and COVID vaccine.
7. Drug Screen (Program director will notify you of the date)
8. Criminal Background Check (Program director will notify you of the date)
   Note: No student will be accepted to the MLS program with ANY felony or misdemeanor that resulted from drugs, alcohol, or violence. The ability to obtain clinical placement or future employment in any medical field is dramatically decreased and nearly impossible with these convictions. Any “pending” case will also limit your competitive admission process for acceptance
9. Proof of personal health insurance and liability insurance.
10. Signed FERPA form, if applicable.

Accepted students and their advisor will select a course progression. The MLS Program Director reserves the right to limit the amount of MLS courses taken per semester in conjunction with individual student course success history, the amount of core studies remaining, and previous academic performance.

Degree Requirements

All MLS Majors are required to complete the following Thomas University General Education Courses:

Composition I (WI)	3cr
Composition II (WI)	3cr
Mathematical Modeling or higher	3cr
Introduction to Statistics	3cr
Creative Comprehension	3cr
Social, Behavioral and Philosophical Inquiry	3cr

Required Science Courses (16 credit hours)

Principles of Biology I or equivalent	3/4cr
General Chemistry I	4cr
General Chemistry II	4cr
Survey of Organic Chemistry	4cr

Science Electives (Choose two)

Human Anatomy and Physiology I	4cr
Human Anatomy and Physiology II	4cr
Cell and Molecular Biology	3cr
Genetics	3cr
Pathophysiology	3cr
Medical Biochemistry	4cr

Articulation/Advanced Placement for completion of MLT/CLT program: (24 Credit Hours)

Required Medical Lab Science Courses: (38 Credit Hours)

MLS 350 Orientation to Online MLS	1cr
MLS 405 Parasitology, Mycology and Virology	3cr
MLS 411 Clinical Urinalysis and Body Fluids II	3cr
MLS 414 Clinical Immunology & Molecular Diagnostics II	3cr
MLS 421 Clinical Microbiology II	4cr
MLS 431 Clinical Hematology and Coagulation II	4cr
MLS 441 Clinical Immunohematology II	4cr
MLS 451 Clinical Chemistry II	4cr
MLS 452 Research Methods in Medical Laboratory Science	3cr
MLS 460 Senior Seminar	3cr
MLS 470 Medical Laboratory Management	3cr
MLS 495 Advanced Clinical Practicum	3cr

Total Credit Hours General Ed. Core: 36-38

Total Credit Hours Program Requirements: 38

Total Articulation Credit Hours: 24
Total Credit Hours for Degree: 120-122

ROUTE B: TRADITIONAL MLS PROGRAM—Please note, this track offered through the School of Arts and Sciences is no longer accepting new students, effective Fall 2022 semester.

ROUTE C: POST BACCALAUREATE MLS BACHELORS ONLINE PROGRAM

A post-baccalaureate program for Medical Laboratory Science supports Thomas University's mission in providing opportunities to students to achieve personal and professional goals in the medical field. Thomas University can assist in working on the resolution to the laboratory staffing shortages nationwide by training individuals with strong science backgrounds (Biology, Chemistry, Microbiology, etc.) to become Medical Laboratory Scientists and serve as valuable assets in their communities. Students will be eligible to sit for MLS Board of Certification (BOC) exam by the American Society for Clinical Pathologists (ASCP). The Thomas University MLS program provides educational opportunities for individuals to obtain the knowledge, skills, abilities, and attitudes necessary to succeed as medical laboratory scientists.

The program strives to achieve and produce graduates that will:

1. Demonstrate the profession's code of ethics and consistently act within those standards during interactions with fellow classmates and working professionals in the clinical laboratory setting.
2. Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem-solving skills.
3. Achieve entry-level competencies of a medical laboratory scientist by testing biological samples using current technology to generate accurate, quality assured laboratory results.
4. Gain relevant professional employment or continue their education within one year of graduation from the program and their employers will be satisfied with the training the graduate received at Thomas University.
5. Utilize critical thinking skills to assess and problem-solve laboratory data as applied to patient diagnoses.
6. Prepare students for the national certification examination for the profession.
7. Prepare graduates to function as competent practitioners in the medical laboratory science field dedicated to maintaining high ideals and standards as a member of the healthcare team.

Program Learning Outcomes: Upon successful completion of the MLS program, graduates will be able to:

1. Demonstrate ethical and professional conduct and interpersonal communication skills with patients, the public, and all members of the healthcare team.

2. Perform laboratory procedures and demonstrate entry-level competencies of a medical laboratory scientist according to established protocols in an atmosphere that fosters interest in and enthusiasm for the profession.
3. Relate laboratory findings to common disease processes.
4. Complete the MLS program and pass the national ASCP certification exam within 1 year of graduation.

Admission Requirements for Route C:

1. Completed a baccalaureate degree in biology, chemistry, microbiology or other physical science at a regionally accredited college
2. Minimum GPA of 2.75 or higher
3. Have fulfilled the following pre-requisite courses or equivalent:
   - College Algebra or higher
   - Statistics
   - Biology I or equivalent
   - General Chemistry I
   - General Chemistry II
   - Anatomy and Physiology I
   - Anatomy and Physiology II
   - Survey of Organic Chemistry

Degree Requirements

All Post Baccalaureate MLS students are required to complete the following Thomas University Courses:

Required Medical Lab Science Courses: (42 Credit Hours)

MLS 350 Orientation to Online MLS	1cr
MLS 250 Introduction to Medical Laboratory Science	3cr
MLS 251 Intro. To Medical Laboratory Science Experience	1cr
MLS 405 Parasitology, Mycology and Virology	3cr
MLS 411 Clinical Urinalysis and Body Fluids II	3cr
MLS 414 Clinical Immunology & Molecular Diagnostics II	3cr
MLS 421 Clinical Microbiology II	4cr
MLS 431 Clinical Hematology and Coagulation II	4cr
MLS 441 Clinical Immunohematology II	4cr
MLS 451 Clinical Chemistry II	4cr
MLS 452 Research Methods in MLS	3cr
MLS 460 Senior Seminar	3cr
MLS 470 Medical Laboratory Management	3cr
MLS 400 Clinical Internship	3cr

Total Credit Hours: 42

MLS Course Descriptions

MLS 250 Introduction to Medical Laboratory Science (3 credits)

Prerequisite: C or better in MTH250 and BIO 262.

This course is designed to provide an overview of clinical laboratory testing as it relates to health and disease. An overview of each core area of the laboratory will be presented along with a brief discussion of clinical significance, methods of analyses, and clinical application. Open to Medical Laboratory Science majors and non-majors.

MLS 251 Introduction to Medical Laboratory Science Experience (1 credit)

Prerequisite: None. Co-requisite: MLS 250

This course is designed to reinforce introductory laboratory skills (use of pipettes, utilization of basic laboratory glassware, dilution practice, proper specimen labeling, etc.) learned in MLS 250 required to perform laboratory tests in the clinical laboratory. Specimen collection techniques, basic laboratory testing methods for each laboratory area, and introduction to laboratory processes and policies will be included. 0.2 credits (20 hours) are assigned to the clinical experience and 0.8 credits are assigned to didactic material.

MLS 314 Immunology and Molecular Diagnostics with Lab (4 credits)

Prerequisite: MLS 250 with a grade of "C" or higher and acceptance into the MLS program.

This course introduces students to the study of immunology, serology, and molecular diagnostic principles and theory. Simulated laboratory experience and techniques will prepare students for a career in a clinical laboratory setting. Topics include basic immunology, clinical immunology and serological techniques, immune related functions and disease states, and diagnostic molecular testing applicable to contemporary clinical laboratories.

MLS 321 Clinical Microbiology I (4 credits)

Prerequisite: MLS 250 with a grade of "C" or higher and acceptance into the MLS program.

This course will introduce basic and clinically significant pathogenic microbiology including miscellaneous and emerging pathogens. Methods used to isolate and to identify various microorganisms will be covered and performed in the student laboratory. Human disease pathogenesis, etiology, epidemiology, and treatment of medically important diseases along with current molecular identification methodologies will be discussed.

MLS 331 Clinical Hematology & Coagulation I (4 credits)

Prerequisite: MLS 250 with a grade of "C" or higher and acceptance into the MLS program.

Lecture and laboratory experiences introduce the fundamental theory and techniques applicable to hematology and coagulation practice in the medical laboratory. Topics include: reticuloendothelial system and blood count formation, complete blood count and differential, related blood tests, correlation of test results to disease states, coagulation and fibrinolysis, instrumentation, critical values and blood cell dycrasias, safety and quality control.

MLS 341 Clinical Immunohematology I (4 credits)

Prerequisite: MLS 250 with a grade of "C" or higher and acceptance into the MLS program.

This course provides the fundamental theory and techniques of immunohematology as related to transfusion medicine. Lecture and laboratory topics include blood group genetics and serology, pretransfusion testing, antibody detection and identification, standard testing procedures, decision criteria for component selection, adverse effects of transfusions, and hemolytic disease of the fetus and newborn.

MLS 350 Orientation to Online Medical Laboratory Science (1 credit)

Prerequisite: Acceptance into the Medical Laboratory Science or Biomedical Laboratory Science major.

This course is intended to prepare students for the online learning environment as well as the specifics of the Medical Laboratory Science and Biomedical Laboratory Science programs. Course components include, but are not limited to, the MLS student handbook, safety in the clinical laboratory, utilizing Learning Commons resources, and other professional topics related to the field.

MLS 351 Clinical Chemistry I (4 credits)

Prerequisites: Minimum of a "C" in the following courses: CHM 101, CHM 102, and MLS 250 and acceptance into the MLS program. This course will introduce the basic principles and techniques of clinical chemistry and quality control. Emphasis will be placed on the composition and pathophysiology of carbohydrates, enzymes, bilirubin, non-protein nitrogen testing, and electrolyte acid/base balance. Diagnostic testing related to clinical chemistry principles, analysis, interpretation, and significance will also be discussed.

MLS 400 Clinical Internship (3 credits)

Prerequisite: Acceptance into the MLS program and with faculty approval. As the first in a series of two clinical courses, this course introduces students to the clinical application of theory and techniques encompassing supervised clinical rotations. Major clinical laboratory disciplines covered include Clinical Chemistry, Immunohematology, Microbiology, Hematology and Coagulation, Urinalysis and Body Fluids, Immunology/Serology/Molecular Diagnostics, and

specimen processing. Under the direction of and evaluation by clinical site preceptors, students will prove entry level competency at the MLS level in all areas of the contemporary clinical laboratory while demonstrating ethical and professional conduct.

MLS 401 Clinical Internship II (5 credits)

Prerequisite: Acceptance into the MLS program and with faculty approval. This course follows MLS 400 to allow students to complete clinical hours in an affiliate clinical laboratory setting for further development and application of theory and techniques. Supervised clinical rotations are conducted in major disciplines including Clinical Chemistry, Immunohematology, Microbiology, Hematology and Coagulation, Urinalysis and Body Fluids, Immunology/ Serology/Molecular Diagnostics, and specimen processing. Students will prove entry level competency at the MLS level in all areas and demonstrate ethical and professional conduct.

MLS 405 Parasitology, Mycology, and Virology (3 credits)

Prerequisite: Medical Laboratory Science Major or Biomedical Laboratory Science Major.

The principles and practices of medical mycology and parasitology will be studied along with a brief overview of virology. An emphasis on general characteristics and mechanisms of human infections from parasites, fungi, and viruses will be explored including epidemiology, lifecycle, laboratory detection, and pathology.

MLS 411 Clinical Urinalysis & Body Fluids II (3 credits)

Prerequisite: Medical Laboratory Science Major or Biomedical Laboratory Science Major.

This course provides students with an opportunity for in-depth application and reinforcement of urinalysis and body fluid examination techniques. It allows the student to become involved in laboratory principles and procedures at a medical laboratory scientist level to include topics on the urinary system as it relates to routine urinalysis, specialized urinalysis tests and techniques, physical, chemical, and microscopic examinations of urine as well as other body fluids such as cerebrospinal, synovial, serous, seminal, amniotic, gastric, and fecal analysis, and correlation of test results to disease states.

MLS 414 Clinical Immunology and Molecular Diagnostics (3 credits)

Prerequisite: Medical Laboratory Science Major or Biomedical Laboratory Science Major.

This course provides students with an opportunity for in-depth application and reinforcement of immunology, serology, and molecular biology principles and techniques. It will allow the student to become involved in laboratory principles and procedures at a clinical laboratory scientist level. Topics include: immune system characteristics and functions, basic and specialized serological tests and techniques, correlation of test results to disease states, PCR

and DNA molecular methodologies, instrumentation methods, and clinical application of molecular testing.

MLS 421 Clinical Microbiology II (4 credits)

Prerequisite: C or better in MLS 321 or Medical Laboratory Science Major or Biomedical Laboratory Science Major.

This course provides a review of basic microbiology principles. Microbial physiology and the interactions between the host and pathogenic microorganisms, clinical and epidemiological consequences of these interactions, and molecular diagnostic testing are also covered. Case study applications allow the student to become involved in laboratory principles and procedures at a medical technologist level requiring concentration, practice, and follow through allowing for in-depth understanding, application and reinforcement of clinical microbiology principles and techniques to include management of a microbiology lab.

MLS 431 Clinical Hematology & Coagulation II (4 credits)

Prerequisite: C or better in MLS 331 or Medical Laboratory Science Major or Biomedical Laboratory Science Major.

An opportunity for in-depth understanding, application and reinforcement of hematology/coagulation principles and techniques is provided. Case study applications allow the student to become involved in laboratory principles and procedures at a medical technologist level requiring critical thinking and troubleshooting methods. Topics include: complete blood counts and differentials, routine and special blood tests, evaluation of data for acceptability; calibration and instrument to instrument comparisons; coagulation to disease states and critical levels; recording and evaluating accuracy, safety, and quality control, and management issues.

MLS 441 Clinical Immunohematology II (4 credits)

Prerequisite: C or better in MLS 341 and/or MLS 414.

This course provides an opportunity for in-depth application and reinforcement of immunohematology principles and techniques in a medical laboratory job setting. Case study applications allow the student to become involved in laboratory principles and procedures at a medical technologist level requiring concentration, practice, and follow through. Topics include: specimen processing, tube/gel serological techniques, component therapy practices, transfusion complications, inventory control, management of disease states, inventory control, records and reagent quality control, equipment and safety, and regulatory accrediting agency standards.

MLS 451 Clinical Chemistry II (4 credits)

Prerequisite: C or better in CHM 101 and MLS 351 or Medical Laboratory Science Major or Biomedical Laboratory Science Major.
Case study applications allow the student to become involved in laboratory principles and procedures at a medical technologist with in-depth application and reinforcement of chemistry principles and techniques in a medical laboratory job setting. Topics include carbohydrates, electrolytes and acid-base balance, nitrogenous compounds, enzymes and endocrinology, liver functions, lipids, therapeutic drugs and toxicology, automated chemistry - routine and stat, immunoassay, special chemistry tests, molecular diagnostics, recording accuracy, safety, and quality control.

MLS 452 Research Methods in Medical Laboratory Science (3 credits)

Pre-requisite: MTH 250 & MLS 350.

The purpose of this course is to introduce students to basic research methods in the medical laboratory science field, including statistical approaches to data evaluation. Students will identify a need in the medical laboratory field, critically analyze the need, and formulate a well-researched literature review to address the need utilizing scholarly articles, books, and a variety of primary and secondary resources.

MLS 460 Senior Seminar (3 credits)

Prerequisite: C or better in the following courses: CHM 107, MLS 405, MLS 411, MLS 414, MLS 421, MLS 431, MLS 441, and MLS 451.

This course provides an in-depth review of the exam content guideline for the national certification exam. Fundamental exam taking skills are presented while reviewing content through case studies, critical thinking and problem-solving exercises. A capstone project will be completed presenting a patient case study that combines laboratory results from all areas of the clinical laboratory. A mock national certification examination will also be given.

MLS 470 Medical Laboratory Management (3 credits)

Prerequisite: Medical Laboratory Science Major OR Biomedical Laboratory Science Major.

An overview of the management and supervision of the Medical Laboratory Science profession is provided including the accreditation, licensure, and certifying procedures. Management styles, motivational techniques, communication skills, leadership, human resource management, financial planning, laboratory information systems, educational methodologies, and professional responsibility are included in this course.

MLS 490 Directed Readings (1-4 credits)

Prerequisite: Medical Laboratory Science Major or Biomedical Laboratory Science Major

This course will enable the student to research and explore technical literature on a topic pertaining to Medical Laboratory Science and trends within the field's disciplines. Working with the instructor, the student will develop a reading list to include current trends, issues, and historical literature on their chosen topic that will support future education or career objectives. Variable credit up to 4 credits.

MLS 495 Advanced Clinical Practicum (3 credits)

Prerequisite: C or better in the following courses: MLS 405, MLS 411, MLS 414, MLS 421, MLS 431, MLS 441, and MLS 451.

This course includes the clinical application of theory and techniques encompassing supervised clinical rotations in the major clinical laboratory disciplines to include Clinical Chemistry, Immunohematology, Microbiology, Hematology and Coagulation, Urinalysis and Body Fluids, and Immunology/Serology/Molecular Diagnostics. Students will prove entry level competency at the MLS level in all areas of the contemporary clinical laboratory and demonstrate ethical and professional conduct. All 3 credits are assigned to the clinical internship (300 hours).

MLS 496 Advanced Clinical Laboratory Concepts (3 credits)

Prerequisite: Successful completion of MLS Core Courses, Medical Laboratory Science (2+2) Major and Program Director approval.

This course is for students with recent or current clinical experience and includes the clinical application of theory and techniques encompassing the major clinical laboratory disciplines to include Clinical Chemistry, Immunohematology, Microbiology, Hematology and Coagulation, Urinalysis and Body Fluids, and Immunology/Serology/Molecular Diagnostics. Emphasis will be given to principles, procedures, quality assurance, and diagnostic correlations.

Successful Progression Through the Program

Rules of Behavior for the MLS Program

Most of the courses in this program are entirely online. This requires a different set of expectations than being present in a classroom physically. Below are some "netiquette" notes for how to be present in class. Attendance is taken weekly in each course and based on the student logging onto Canvas and completing assignments on time.

Netiquette Guide for Online Courses

It is important for you as a student to recognize that the online classroom is a classroom, and certain behaviors are expected when you communicate with your peers and instructors. These guidelines for online behavior and interaction are known as "netiquette".

The following information helps you be a more effective and successful student when communicating via email, chat rooms, or on discussion boards as a part of your online learning activities at Thomas University.

General Guidelines

When communicating online, you should always:

- Treat your instructor(s) with respect, even in email, or in any other online communication.
- Always use your professors' proper title: Dr. or Prof., or if you're in doubt use Mr. or Ms.
- Unless specifically invited, don't refer to them by the first name. Some will be OK called "Bob" and others will expect to be "Mr. Smith".
- Use clear and concise language. Be respectful of readers' time and attention.
- Remember that all college-level communication should have correct spelling and grammar. Also, avoid using slang and text language.
- Avoid using the caps lock feature AS IT CAN BE INTERPRETED AS YELLING.
- Be cautious when using humor or sarcasm as the tone is sometimes lost in an email or discussion post and your message might be taken literally or offensively.
- Be careful sharing personal information online (both yours and others).

Discussion Board "Netiquette" and Guidelines

When posting on the Discussion Board in your online class, you should:

- Make posts that are on-topic and within the scope of the course material. If necessary, re-read the instructions from your instructor.
- Take your posts seriously and review and edit your posts before sending. (Would you put sloppy writing with poor grammar in a formal research paper?)

- Be as brief as possible while still making a thorough comment.
- Always give proper credit when referencing or quoting another source.
- Be sure to read all messages in a thread before replying.
- Don't repeat someone else's post without adding something of your own to it.
- Avoid short, generic replies such as, "I agree." You should include why you agree or add to the previous point. The point of a discussion in an online course is to help you and your other students learn through an in-depth consideration of important topics.
- Always be respectful of others' opinions even when they differ from your own. When you disagree with someone, you should express your differing opinions in a respectful, non-critical way.
- Be open-minded as that is one of the major points of participating in an open classroom discussion.

Email Netiquette

When you send an email to your instructor, teaching assistant, or classmates, you should:

- Use a clear and descriptive subject line to give them a reason to open your email.
- Include a polite salutation.
- Identify yourself, your course, and section number.
- Use formal language (no text slang) and be concise.
- If you are sending an email while upset or angry, think about not sending it until you've cooled off. A 24-hour rest period is often a good idea.

Assignments, Quizzes, Exams and Projects

Students are expected to be prepared to discuss the topic being presented during any module. All assignments should be typed in a word/PDF document and submitted in those file types only. No handwritten work should be accepted UNLESS otherwise noted in assignment instructions.

All due dates will be made available when the module is opened. You can find these due dates in the module itself, at the bottom of the Syllabus page in Canvas, and all due dates are populated into the Canvas Calendar to easily view multiple class due dates at one time. It is the instructor's discretion to accept any late work with point deductions.

Online Course Assessment

Your assessments (quizzes and exams) must be proctored online via **Honorlock**, a live proctoring service. This service will be utilized in all fully online MLS courses at Thomas University. It helps us ensure student identity and the academic integrity of the assessment and

mimic the testing environment of the certification exam. **Failure to attempt the assessment as specified in this handbook or course syllabi will result in automatic failure of the course.**

Things you MUST know and do prior to the assessment:

- Proctored exams cannot be taken in the TU Library Computer Labs because that is a public environment.
- Test your equipment before your appointment to ensure everything works
- Equipment needed: a computer with fast and reliable internet connection, webcam, headphones or speakers connected to the computer, a working microphone (often connected to the computer or webcam)
- Document needed: Identification (student or government-issued)
- Other Information:
  Be sure to set aside enough time to complete the assessment and to have time to work with the proctor to get set up for the assessment.
  Take the assessment in a quiet, comfortable, and well-lit area. Your proctor will need a clear view of your surroundings and face to grant access to your assessment.

Course Evaluation

The grading systems and objectives to be used in each MLS course are included on the syllabus provided to students in the first week of each course. Exams, study questions, assignments, quizzes, projects or any other criteria to be used in graded are marked and returned to students promptly. All final exams **MUST** be at a 70% or better to pass the course. Failure to earn 70% or better will result in an F for the final grade.

TU Grading Scale

The current grading scale at TU:

A= 90 – 100	Outstanding
B= 80 – 89	Above average work
C= 70 – 79	Average work
D= 60 – 69	Marginal performance
F= Below 60	Failure to meet minimum requirements

See the College Catalog for an explanation of grades of W, WA,V, K, I, and E. Final course grades are letter grades. Final grades are available online through the student's TU Hawklink account on the school web page. Grades are not provided via telephone or e-mail.

Required Textbooks

The student is directed to the individual syllabus for the textbooks that are required for each course, in addition, the University Bookstore can provide a list of books being used in each course. The student should retain the textbook at course completion. They will serve as reference texts during the Senior Seminar course and the Practicum/Internship. In addition to texts, the program has secured licenses for several online websites. These sites will be used as supplemental material and completion of some of the end of module quizzes will be included in the computation of the final grade of the course they are enrolled in. The student will be assigned a username and password by the Program Director. These will be valid until graduation. The student is encouraged to visit these sites often as part of their preparation for the national registry exam. Access to Medialab's Exam Simulator is available for one year post graduation.

Scholastic Requirement

MLS students must attain a minimum grade of "C" (2.0) throughout the program. A student receiving a grade of "D" (1.0) or lower in a course may be allowed to retake that course the next time it is offered. Most MLS courses are offered once a year. Therefore, a grade of "D" may delay graduation by at least one year provided a "C" or better is achieved the second time. It is not possible to graduate with a grade of "D" or lower in any course applied toward the MLS program. If a student earns a grade less than a "C" in two MLS courses while in the program, he/she will be dismissed from the program. The student may formally request readmission but will only be granted readmission if there is proof that the reason for poor performance has been rectified and available space in the program cohort exists. A student that is readmitted and fails to maintain the minimum GPA and is dismissed from the program a second time will not be readmitted to the MLS program.

Testing Policy

Online MLS courses require that all assessments be proctored by Honorlock, an online proctoring service. Tests are available for students only during the dates posted on the syllabus and set by the university. Refer to your individual syllabi for detailed instructions. Failure to complete the proctored final exam with a grade of 70% or better will result in failure of the course.

Withdrawal, Readmission, and Appeal Policies

Withdrawal

A "W" will be assigned by the Registrar to any student who formally withdraws from any class after the last day of the drop/add period, and prior to the last day to drop a course without

academic penalty. Students may also be administratively withdrawn (WA) from a course by the course instructor for poor or non-performance.

Grounds for withdrawal from the program include, but are not limited to:

- A grade of "D" or below in two MLS courses
- A grade of "D" or below in ANY clinical rotations
- A Professional Evaluation Grade of 2.0 or below
- Unsafe student health practices
- Unacceptable behavior in class or in clinicals

Note: Students who leave or are withdrawn from the program must initiate and complete an Exit Interview with the MLS Program Director.

Readmission

A student who is withdrawn for any of the reasons mentioned above may request to be considered for readmission by submitting a typed letter to the Program Director stating what happened and how it will be rectified if allowed readmission; however, readmission is not automatic.

Students may be considered for readmission to the program one time only, under the following conditions:

- Space in the class is available.
- Student meets the admission requirements effective for the semester for which they are readmitted.
- Students who are withdrawn due to poor academic performance must provide sufficient proof that reasons for poor performance have been rectified.
- Students who withdraw or are withdrawn because of unacceptable professional behavior issues must provide documentation that corrective actions have been completed and an action plan will be required.

If three semesters or more have lapsed since the student withdrew from the program, the student must pass a comprehensive exam in the subjects already completed to measure whether the student has retained the knowledge gained from that course. The student must earn a minimum score of 70% on the exams.

Note: If more than three years have elapsed since withdrawal from the program, the student must reapply for admission as a new student and repeat all professional course work.

Appeals

Any matter of appeal should follow the line of communication as follows:

1. Address the concern with the professor directly.
2. If no resolution, the student should forward original communication (via email) to the MLS Program Director.
3. If the concern is with the MLS Program Director, the student may contact the Division Chair.
4. If no resolution, please see the Thomas University Catalog for the Appeals process.

Violations

All students are considered bound by the Honor Code upon admittance to the University. Violations of the Honor Code fall mainly within the categories of cheating, plagiarism, and lying related to any academic matter. Some examples of these violations are presented below but are not an exhaustive list.

1. Cheating-- the unauthorized usage of notes, books or other materials on a test, quiz, or examination; copying ideas or facts from another student's writing, whether online or in a face-to-face class; giving or receiving any pertinent information during testing, or giving or receiving, without authorization, test questions or other related information prior to the test; submitting a paper written for another class without specific permission of the instructor; giving or receiving unauthorized assistance on a paper, project or other assignment; distributing via the internet or other means (whether or not for compensation) any instructor provided lecture notes or other class materials without the written consent of the instructor; sharing access to online course materials, quizzes, exams, or other course materials without the written consent of the instructor.
2. Plagiarism-- the use of facts, ideas, phrases, charts, etc. from any source without giving credit for the information. In a paper, report, or similar graded submission, all unacknowledged material is assumed to be the original work of the writer. Ideas and information from another source, whether paraphrased or a direct quotation, must be acknowledged using a standard documentation format such as APA. The downloading of papers from the internet and submission of the material as work done by the student is one of the most blatant examples of plagiarism. Individual professors are responsible for explaining their referencing policies in each class.
3. Presenting false information or lying -- includes consciously furnishing false information to other students, faculty members, or administrators with the intent to mislead; utilizing artificial intelligence resources to submit paper as their own work.
4. Aiding and abetting a violation of the Honor Code-- includes intentionally:
    a. providing information or other assistance to another person with knowledge that such aide could be used to commit any of the violations noted above
    b. providing false information in connection with any inquiry regarding academic integrity. Any student who is found to commit any violation of academic integrity will at a minimum receive a grade of "F" on the assignment. Multiple or grievous violations will receive an "F" for the course.

Graduation

Thomas University confers degrees each semester, upon the recommendation of the faculty, to students who have successfully completed all course requirements. All qualified students are invited to participate in the commencement ceremony each spring semester. All students must have a minimum GPA of 2.0 to be eligible for recommendation for graduation. At least 25% of all hours earned toward any degree must have been earned at Thomas University. Students must take all MLS courses at Thomas University to award the B.S. in Medical Laboratory Science.

Students who are awarded a bachelor's degree may earn the distinction of graduating summa cum laude (4.0 GPA), magna cum laude (3.75-3.99 GPA), or cum laude (3.5-3.74 GPA). GPAs for graduation honors are calculated using all hours attempted at all institutions attended.

Graduation Procedure

Students who expect to graduate must:

1. Complete the Intent to Graduate application and submit it to their advisor for evaluation by the appropriate date. The advisor will then forward the signed application to the Registrar. The deadlines for turning in this form to the Registrar's Office are October 1 (spring semester graduation), December 1 (summer) or March 1 (fall semester). Students who graduate in the fall are eligible to participate in the commencement ceremony the following spring.
2. Clear all accounts and pay graduation fees.

Program Closure Teach Out Plan

In the event that the MLS program unexpectedly closes due to a natural or unnatural disaster, the following steps will be taken. Intentional closure of the program will be communicated to all students immediately. In case of a disaster, the university will inform students of a plan for continuation of their education as soon as that information is available. One example of a possible resolution may include transitioning on-campus students to an online learning environment to complete their courses. NAACLS will be notified and a teach out plan will be provided to them within 30 days of the official announcement of program closure.

Prospective students:

- In the case of permanent closure, students will be informed that the program will not take a new cohort due to program closure.
- In the case of a natural or unnatural disaster, the program will work with other laboratory science programs to continue education and training until training can resume at the university. Students will be counseled in applying to other local programs.
- Program closure information will be posted on the university website.

Current students:

- Students will be informed of program closure.

- In the case of a natural or unnatural disaster, the program will work with other laboratory science programs to continue education and training until training can resume at the university. In the event of a mandated permanent closure, currently enrolled students will be allowed to complete the program.
- A university official will be designated to clear students applying for the certification exam.

Certification and Licensure

Upon completion of the program, students are eligible to sit for a national certification examination. Certification is a voluntary process; however, most employers prefer to hire certified practitioners and some states require it. Although there are several certification agencies, preference of employers for certification is typically through the American Society of Clinical Pathologists Board of Certification (ASCP BOC). The program's instructors will provide information on the application procedure and cost.

The student may contact the ASCP directly at:

American Society for Clinical Pathology
Board of Certification
33 West Monroe St. Suite 1600
Chicago, IL 60603
www.ascp.org
Tel: 312-514-4887

Preliminary pass/Fail results are received immediately, and numerical scores are received within several weeks. You may be employed as "registry eligible" before taking the examination or receiving scores.

For state licensure, refer to the state licensing agency if you plan to seek employment in a state that requires licensure. Your ASCP certification will usually stand as proof of competency until you can fulfill the requirements of licensure. For more information, review ASCLS's Licensure Page. URL: https://ascls.org/licensure/

Laboratory Information

Safety Guidelines

Standard Precautions

With the implementation of the Occupational Safety and Health Administration's (OSHA) Universal Blood and Body Fluid Precautions and Blood- Borne Pathogens standards, the risk of transmission of infection of blood-borne illnesses has been minimized. All clinical affiliates are in strict compliance with OSHA's Standard Precautions guidelines. Since medical history and examination cannot reliably identify all patients infected with HIV, Hepatitis B or other blood borne pathogens. Standard Precautions should be consistently used for all patients, blood, and body fluids. Students will adhere to the University's safety standards, the CDC, and OSHA.

Hazardous Substances

Students should be aware that potentially hazardous biological substances will be handled routinely during clinical laboratory work. All reasonable safety precautions will be taken to ensure the safety of students. Students will be instructed on the University's Exposure Control Plan and each affiliate will instruct the students as to their specific Safety and Exposure Control Plan. The ultimate responsibility for following such procedures and complying with safety guidelines lies with the student. Potentially hazardous materials that will be handled include:

- Pathogenic microorganisms
- Human blood, urine, feces, and body fluids which may be possible sources of infectious diseases (i.e., hepatitis B virus, hepatitis C virus, HIV)
- Radioactive material
- Corrosive and hazardous chemicals

General Rules

The following are safety rules that must be followed during clinical rotations and in the laboratory classroom. Please refer to your clinical affiliate safety guidelines for any additional policies. Personal Protective Equipment (PPE) must be used routinely to prevent skin and mucous membrane exposure.

- Note the location of all safety devices. (You will be shown how to use them.)
- Leave aisles free of any obstruction.
- No food or drink is allowed in the laboratory at any time.
- No eating, drinking, smoking, chewing gum or applying makeup in the laboratory.
- No pipetting by mouth.
- Never recap, bend, or deliberately break or remove needles from syringes.

- Long hair and loose baggy clothing must be tucked out of the way or pulled back.
- No open toed shoes or sandals are allowed during lab time. Shoes must also be made of wipeable leather with no holes or mesh.
- Avoid wearing chains, bracelets, excessive amounts of rings, or other loose hanging jewelry.
- Cell phones are not allowed in the laboratory.
- Young children or pets are not allowed in the laboratory.
- Personal Protective Equipment (eye shield, gloves, lab coat) must be worn when manipulating specimens.
- Wash the work area with disinfectant (i.e. 10% bleach) at the beginning and at the end of a lab session.
- Wash your hands with soap at the beginning and end of a lab session.
- Regular trash **does not** go into biohazard waste bags. Only trash contaminated with body fluids is placed in red biohazard bags. Broken glass or needles are to be discarded into a **sharps** container.
- Report any splatter or injury to the professor immediately.
- Spill kits are available for large biohazard spills.

Exposure Control Plan

Students are expected to follow standard precautions and safe practice guidelines as recommended by CDC and OSHA in the classroom, labs and at clinical sites.

Sharps and Sharps Containers

1. Standard precautions are to be practiced at all times.
2. The following items shall be considered sharps and disposed in a sharps container:
    a. Syringes with and without needles
    b. Phlebotomy needles and butterflies
    c. Ampules
    d. Evacuated tubes
    e. Vials
    f. Lancets
    g. Broken glass contaminated with body fluids
3. The sharps container will be kept in close proximity to students working with sharps.
4. All phlebotomy supplies will be maintained within a locked cupboard when not in use.
5. Sharps containers will be sealed when 2/3 or ¾ full and placed in the lab storage room. The designated person for Thomas University will arrange pickup by licensed waste facilities.

6. Test tubes containing blood are to be placed (capped) into a biohazard red bag. The bag will be placed in the lab storage room in a hard sided container at the end of each lab session. When full, the designated person for Thomas University will arrange pickup by licensed waste facilities.
7. Urine containers are to be emptied in the sink after the lab session. The tops will be secured back onto the containers before discarded. Urine containers may be discarded with regular trash if there is no visible blood or identifiable patient information on the label.

Student Education

Students are educated on the following:

1. Standard precautions, the use of personal protective equipment, and hand washing.
2. Proper disposal of sharps – no needle recapping.
3. Proper disposal of hazardous waste.
4. Transmission based precautions for airborne droplets.
5. Procedure for reporting needlestick injuries or splashes.

Needlestick and Blood Spill Injury Policy

1. Clean wound thoroughly using soap and water.
2. Wash eyes carefully with water for 15 minutes.
3. Apply bandaid.
4. **Report needlestick to instructor** who will report incident to Program Director in a timely manner.
5. **Fill out incident report.** The incident report will be filed in the Sharps Injury Log.
6. Incident reports will be kept on file for at least five years.
7. Report to the ER or your healthcare provider as soon as possible for assessment and treatment.

Housekeeping

1. In the event of an accidental spill of any blood or other potentially infectious material, the affected area (floor, wall, equipment, benchtop) will be cleaned and decontaminated.
2. The contaminated paper towels will be disposed of in a biohazard bag.
3. A 1:10 dilution of bleach will be used for decontamination.
4. Bleach will be left on the contaminated surface for at least 20 seconds before wiping with a paper towel.

5. Any article contaminated with potentially infectious material is placed in a red biohazard bag, securely tied and sent to the lab storage room for disposal/autoclaving.

Clinical Training

Clinical training consists of clinical rotations through the different departments of clinical laboratories. New affiliates are added each year depending on the location of students. Clinical sites are limited, and sites will be awarded at the discretion of the Program Director and Clinical Coordinator based upon GPA, student rank in the cohort, and professionalism. The program director or clinical coordinator will initiate the formal contract process and provide information on what is expected of the clinical site. Students are not choosing their sites, nor are they allowed to begin this process and any attempts to do so will result in dismissal from the program or rejection of program acceptance. Students may be placed in more than one clinical site to meet the required competencies and for successful internship completion. Students must comply and submit any additional documentation or testing required by their clinical site. Complete clinical training rules and polices can be found in the clinical handbook.

In the event that clinicals cannot be completed at the assigned site due to no fault of the student, the Program Director and/or Clinical Coordinator may locate an alternate site or provide equivalent online assignments to demonstrate competency based upon the established checkoffs. In the case of a non-renewal or termination of an affiliation agreement, students already enrolled in the internship at the site that does not renew or terminate will be placed at another clinical site and/or utilize online modules to complete the required competencies. If a student is removed from a clinical internship due to unacceptable performance of any kind, he/she will not be guaranteed placement at another clinical site.

ROUTE A: 2+2 PROGRAM

Most often, 2+2 students complete their clinical training at their place of employment. If the laboratory where the student is employed as an MLT is not qualified to serve as a clinical site, the student must locate an alternate site and provide that information to the program director and clinical coordinator. The MLS 2+2 Program at Thomas University is a NAACLS accredited program that does not require a set minimum hours of training. These clinicals are competency based and completed during the course MLS 495 Advanced Clinical Practicum. Students will be enrolled in that course upon completing the major didactic coursework. No practicum will be allowed until all theory/didactic portions are passed with a 70% or higher for the following courses: MLS 405, MLS 411, MLS 414, MLS 421, MLS 431, MLS 441, and MLS 451. Preceptors may judge the initial experience of students and begin training at an appropriate point. Preceptors may also determine that additional time is needed for students to demonstrate competence. Clinical sites for the 2+2 students will determine competence and complete professional evaluations in all required areas. Students must meet the hourly requirements of the clinical site, if applicable.

ROUTE B: ONCAMPUS TRADITIONAL PROGRAM- Not operating at this time.

ROUTE C: POST BACCALAUREATE CERTIFICATE PROGRAM

If students in the post baccalaureate program are granted a clinical internship site, they must accept the rotation awarded. The MLS Program Director/Clinical Coordinator is not responsible for procuring an alternate clinical rotation site. The MLS Program Director/Clinical Coordinator will make their best effort to locate a site in close proximity to the student. Because students cannot exceed the student to clinical instructor ratio as set by the site, students may be placed on a waitlist for clinical completion, based on program GPA and performance. Travel to and from these sites is entirely the student's responsibility. Some clinical sites are exclusive to a single student and are not available for additional students. Students WILL be dismissed from the program if they are found to be acting on behalf of Thomas University to secure their own personal clinical site.

Students will be placed in a clinical site upon completion of the major didactic coursework. No internship will be allowed until all theory/lab portions are passed with a 70% or higher for the following courses: MLS 250, MLS 405, MLS 411, MLS 421, MLS 431, MLS 441, and MLS 451. The MLS program at Thomas University is a NAACLS accredited program that requires a set minimum hours of training on all disciplines that compromise our field.

The internship portion of these disciplines requires the following and are completed in the course MLS 400 Clinical Internship.

- 40 hours Urinalysis and Body Fluids
- 160 hours Microbiology
- 160 hours Hematology
- 160 hours Clinical Chemistry
- 160 hours Immunohematology
- 40 hours Immunology/Molecular Diagnostics
- 40 hours Phlebotomy/Specimen Processing

Clinical Schedules

A schedule will be worked out between the Clinical Coordinator and the clinical student coordinator/preceptor. Students are expected to attend all designated sessions scheduled. A 40-hour work week is expected for Route B and C students. Route A students may complete clinical hours before or after their scheduled work shift or on their day off. Absence from the internship exceeding 2 days (including tardy, late, request to leave early etc.) will result in either dismissal from the clinical site and/or program.

Clinical hours are recorded using the Trajecsys (TRS) system. If the student cannot attend the scheduled times, the clinical instructor and clinical coordinator must be informed of the absence a minimum of 90 minutes prior to the beginning of the scheduled shift. It is the responsibility of the student to contact the appropriate individual(s) at the university and

clinical site. Any tardiness not reported to the clinical site and the Clinical Coordinator will not count toward the student's total clinical hours. Students must allow TRS to mark their location or the time does not count.

Any student that fails to be present for the schedule that was agreed upon and is dismissed from the clinical site will be immediately dismissed from the program. Students are not allowed to "re-negotiate" the schedule **AT ANY TIME**. Any report from a preceptor regarding schedule changes or special alteration of schedule requests will be dismissed.

Students are to always maintain an agreeable and professional attitude. If a student's behavior is unprofessional and disruptive to the flow of work in the clinical laboratory, the clinical supervisor will first counsel the student. If behavior continues following reasonable warning, the supervisor may ask that the student leave for the day and must immediately notify the MLS Program Director and/or Clinical Coordinator. If a student is dismissed from a clinical site due to unprofessional behavior, or excessive absences/tardiness, the MLS Program Director will withdraw the student from the MLS Program and award an "F" for the clinical rotation.

Time Commitment

The Clinical Practicum/Internship is a 16-week commitment. There will be no accommodation for the students' personal or employer requirements. You must be able to commit to the 16-week, 32–40-hour requirement. The shift is typically a first/day shift, but a clinical affiliate may be flexible to days/times, but it is not guaranteed.

Service Work Policy

Students are encouraged to develop confidence and independent work skills in every phase of their training. With qualified supervision and guidance from the clinical instructor employed by the clinical affiliate, students who have satisfied competency requirements for various test procedures can perform actual patient work; however, ALL student results must be verified before leaving the lab area by the clinical instructor.

The affiliated laboratory may not, under any circumstances, use the student to perform work (service work) in lieu of a regular employee. This would violate NAACLS accreditation standards for the Thomas University MLS Program. Service work by students in clinical settings outside of regular academic hours must be noncompulsory, paid, supervised on site, and subject to employee regulations.

Grading for Clinical

The grade expectations for the clinical will be found in each corresponding syllabus. The student is expected to be found competent at an entry-level Medical Laboratory Scientist level in EACH clinical area. If they have been unsuccessful in one area, additional time may be

awarded to remediate. If they remain unsuccessful, an F will be awarded for the clinical course, and the student must repeat the course at the next available time.

Insurance and Injury

Professional liability insurance is needed to protect you as a student training in the hospital setting. You **must** purchase liability insurance and send proof of coverage to the Clinical Coordinator before you enroll in the clinical course. The Program Director/Clinical Coordinator will provide instructions when the time comes to purchase this.

Personal medical insurance is required for the clinical practicum/internship and if a student is injured at the clinical site the student is personally responsible for any costs incurred as a result of that injury. If a needlestick or biological exposure occurs, the student is to follow the guidelines of the clinical site and notify the Program Director and Clinical Coordinator immediately.

Medical Clearance

Each clinical affiliate has its own regulations for medical clearance. You will be informed as to what the requirements are for your clinical site at least 90 days in advance of the proposed start date. These requirements must be met at least 30 days before the proposed start date.

In general, the requirements for most clinical sites are as follows:

- Completed and up to date physical health form
- TB Screen (skin test followed by xray if positive or previously positive; blood test is also acceptable)
- Hepatitis B (or waiver)
- TDAP (Tetanus, Diptheria, Pertussis)
- MMR/Varicella (measles, mumps, rubella, chicken pox)
- Background Check (some affiliates may require their own background check)
- Drug screen
- Flu Vaccine

If you are completing your clinical at your employer, they may accept a waiver for these items if included in your preemployment screening. Some clinical sites may still require you to repeat these as a student. The Program Director/Clinical Coordinator will tell you what is required.

Clinical Handbook

Each student entering a clinical rotation will be given a Clinical Handbook. The handbook is a guide for the student and lists policies, procedures and objectives. In addition, the handbook can be used to record the student's work throughout the practicum. Once an area is completed, these check off sheets will need to be entered by the preceptor into Trajecsys (TRS). A copy of

the handbook is available in the MLS Connections Canvas Shell as well as the corresponding clinical course when enrolled.

Inclement Weather Policy
Students must follow the policies of the University. If the University declares an emergency cancellation, students must contact the clinical affiliate to let them know that the campus has closed, and they will not be at their clinical for the day. The Emergency Cancellation Announcement may be posted on the TU website, sent via email or by phone/text. The Program Director/Clinical Coordinator will also notify students of this cancellation.

If you are not near Thomasville, you should follow the closures/cancellations of the college/university near where you are. For example, snow in Boston does not affect students in clinicals in Georgia.

Clinical Supervision

All students will be supervised by an individual in the department to which you are assigned. This individual will work closely with you and monitor your work in that department. You will also meet periodically with the Clinical Coordinator to answer any questions or discuss any problems that may have occurred during your rotation. If you encounter a problem at your affiliate, please contact the Clinical Coordinator at your earliest convenience so that it can be addressed.

Cell Phone Policy
Students should not bring cell phones into the classroom or clinical site. There is never an excuse to be talking on the phone while at a clinical bench. If an emergency arises, where it is necessary to carry a cell phone to the classroom or clinical site, it must be set to vibrate mode so as not to disturb the learning environment. Students who must answer a call must step out of the classroom or lab or wait until an appropriate break time.

Dress Code
*Please refer to the specific policies of your affiliate institution.

MLS students will always maintain a neat, groomed, and professional appearance.

Classroom Attire
Students must wear:

- Hunter Green scrubs to class meeting sessions and only approved t-shirts.
- Close toed leather shoes (no “Crocs” are allowed)
- Provided PPE.

Clinical Attire
The appropriate attire includes:

- Students must wear appropriate uniforms for all clinical assignments. Scrub tops and bottoms are required. Thomas University requires HUNTER GREEN scrubs.
- Closed-toe, clean, leather shoes.
- PPE Provided by the facility.
- Student ID badge must be worn at ALL TIMES.
- Hair should be clean at all times and must be placed up and pulled off the face and the shoulders. Hair is a source of cross contamination and must not interfere with the delivery of patient care. Ponytails must be controlled and not drop forward when giving patient care or operating laboratory equipment. Beards and mustaches should not appear in disarray. They should be clean and neatly groomed. Long hair secured in a "bun" must be neat and orderly.
- Makeup worn in moderation.
- Fingernails harbor microorganisms and must be kept reasonably short. No false/acrylic fingernails are allowed in the clinical area.
- A watch, wedding bands or simple rings, and simple earrings (not hanging) are permitted. No other jewelry or body ornamentation is permitted. This includes piercings! Conservative earnings in the lobes are allowed. Additional piercings are NOT allowed.
- Tattoos must be covered. If you have tattoos on the arms, neck, or other areas that could potentially be visible, you MUST wear undergarments (turtleneck, long sleeves etc.) to insure they are not exposed or visibly noted.
- Good personal hygiene is of the utmost importance when working with other people. Please consider the following:
- Teeth and breath – brush and floss daily. Use mouthwash as needed.
- Perspiration and body odor – daily bathing and use of deodorant is recommended.
- Perfume/cologne – **do not wear**. This is highly important to asthmatic and other respiratory distress patients and is often against hospital policy.
- Do not chew gum, use tobacco products, vape, or apply makeup in the clinical setting.
- Undergarments may not be visible through scrubs by pattern or design at any time.
- The student must meet any additional regulations of the clinical affiliate not covered in this handbook.

Student Photo ID

To receive your TU Student ID cards, you must request a TU student ID by submitting a Student ID Request Form to Office of Student Life. Make sure you review the photo submission requirements before submitting the request form. When your TU student ID card is ready, our administrative assistant will contact you. The students that are local can pick up and the ones that are long distance, we will mail to you.

For information on the Student ID Request Form, please navigate to https://www.thomasu.edu/student-life/campus-life/student-ids/.

Photo Submission Requirements

The photo you submit must meet the following requirements:

- Must be color (cannot be black and white)
- Must have a plain, light-colored background
- Must be clear and well-lit — no excessive shadows, pixilation/graininess, etc.
- Your entire head and shoulders must be visible
- You must be facing forward, looking directly into the camera
- Do not have any other people or objects in the photo
- Do not wear a hat or sunglasses.

Thomas University reserves the right to determine any photo as being inappropriate.

Clinical Conduct Expectations

As a student in this profession, one of the most important responsibilities is in personal conduct. The impression you make on the patients and others reflects not only upon yourself, but also on the department and the university. Unprofessional conduct will not be tolerated and will result in dismissal from the program.

Any student under the influence of non-prescriptive drugs or alcohol in the classroom or clinical site will be dismissed from the program.

The university offers MLS students the opportunity to apply theory and laboratory testing at an MLS level under direct clinical supervision. To obtain a consistently high level of training in clinical laboratory science, with a positive impact on patient care, the code of conduct should be maintained. Professionalism is graded by the clinical preceptors using the Professional Evaluation Form, which can be found in the clinical handbook.

Recognizing that personal and professional conduct can impact the quality of health care delivery, MLS students agree to:

- Treat patients, classmates, instructors, and healthcare personnel with respect, care, and thoughtfulness.
- Demonstrate compassion and kindness toward colleagues and patients.
- Maintain honesty, initiative, enthusiasm, and adaptability in action and attitude.
- Safeguard patient information as confidential, and in adherence with state and federal laws and regulations.
- Perform duties in a dependable, accurate, precise, timely, and responsible manner.

- Function as a collaborative team member within the university and clinical laboratory setting.
- Communicate effectively and appropriately.
- Be cognizant of and adhere to channels of authority.
- Demonstrate physical and psychological stability under stress.
- Accept responsibility for own work and results.
- Display an appropriate level of confidence, while recognizing limitations.
- Maintain appropriate professional appearance and hygiene.
- Strive for increased efficiency and quality by using organizational skills.
- Continue to study, apply, and advance medical laboratory knowledge and skills and share such with my colleagues, other members of the healthcare community, and the public.

Clinical Affiliates

*This list is not inclusive and new sites are added each year.

Archbold Medical Center

Atrium Health—Floyd Medical Center

Centrastate Healthcare System

Dodge County Hospital

East Georgia Medical Center

Emory Hillandale Hospital

Fairview Park Hospital

HCA Capital Hospital

Jefferson Health System

Miller County Memorial Hospital

Northside Hospital System

Quest Diagnostics

South Georgia Medical Center

Tift Regional Medical Center

Wellstar Health System

MEDICAL LABORATORY SCIENCE PROGRAM

PROGRAM HANDBOOK

2024-2025

I, _____, certify that I have a copy of the MLS Program Handbook for the academic year 2024-2025. I have reviewed the information carefully and understand that I am accountable for all the information in the MLS Program Handbook. I further understand that I am responsible for clarifying with an MLS faculty member any areas that I do not understand. I have been given the opportunity to ask any questions that I have about the MLS/MLS Program Handbook. I understand the policies for progression in and completion of the MLS Program. I have read, understand, and agree to perform the Essential Functions as described in the handbook. If needed, I have arranged through Student Support Services for necessary accommodations to perform the Essential Functions. I have been advised that the information in the MLS Program Handbook is valid for the period beginning August 2024 and ending when superseded.

_____ _____

Student Signature Date