

Appendix A

Each of the following sub-appendices contains a detailed chart of program and course standards revisions described within the Probe notice documentation.

- A1- CTL3: Clinical Laboratory Technology
- A2- CLBT 1010: Introduction to Clinical Laboratory Technology
- A3- CLBT 1030: Urinalysis/Body Fluids
- A4- CLBT 1040: Hematology/Coagulation
- A5- CLBT 1050: Serology/Immunology
- A6- CLBT 1060: Immunohematology
- A7- CLBT 1070: Clinical Chemistry
- A8- CLBT 1080: Microbiology
- A9- CLBT 2090: Clinical Urinalysis, Serology and Preanalytic Specimen Process Practicum
- A10- CLBT 2100: Clinical Immunohematology Practicum
- A11- CLBT 2110: Clinical Hematology/Coagulation Practicum
- A12- CLBT 2120: Clinical Microbiology Practicum
- A13- CLBT 2130: Clinical Chemistry Practicum
- A14- CLBT 2200: CLT Certification Review

A1- CTL3: *Clinical Medical Laboratory Technology*

- The program title was updated to *Medical Laboratory Technology* to align with the terminology used within the profession.
 - Major Code CLT3 remained as is.
- Revised Program Description
 - ~~Clinical~~ The Medical Laboratory Technology program is an ~~6-semester associate of~~ Associate of Applied Science degree program where students learn to perform ~~clinical~~ medical laboratory procedures under the supervision of a qualified pathologist and/or ~~clinical~~ medical laboratory scientist. Classroom training is integrated with clinical experiences under the medical direction of cooperating hospitals. Graduation from this program allows students to take a national certification examination ~~which is~~ necessary for clinical employment.
- Revised Occupational Trends
 - ~~Nationally, as well as in Georgia, employment of clinical laboratory technicians and technologists is expected to grow 14 percent between 2006 and 2016, faster than the average for all occupations. The volume of laboratory tests continues to increase with both population growth and the development of new types of tests. Technological advances will continue to have opposing effects on employment. On the one hand, new, increasingly powerful diagnostic tests will encourage additional testing and spur employment. On the other, research and development efforts targeted at simplifying routine testing procedures may enhance the ability of non-laboratory personnel, physicians, and patients in particular to perform tests now conducted in laboratories. Although hospitals are expected to continue to be the major employer of clinical laboratory workers, employment is expected to grow faster in medical and diagnostic laboratories, offices of physicians, and all other ambulatory health care services. Nationally, the forecasted openings in clinical laboratory technology are predicted to be 14% for the next 10 years. In Georgia, the forecasted openings are predicted to be 21% for the next 10 years.~~
 - *Based on the EMSI reports, there is projected employment growth for Medical Laboratory Technologists and Technicians between 2021 to 2031. The national average of employment is expected to grow 13 percent and Georgia is expected to grow at 8 percent. The volume of laboratory tests continues to increase with both population growth and the development of new types of tests. Technological advances will continue to have opposing effects on employment. On the one hand, new,*

increasingly powerful diagnostic tests will encourage additional testing and spur employment. On the other, research and development efforts targeted at simplifying routine testing procedures may enhance the ability of non-laboratory personnel, physicians, and patients, in particular, to perform tests now conducted in laboratories. Although hospitals are expected to continue to be the major employer of medical laboratory personnel, employment is expected to grow faster in medical and diagnostic laboratories, offices of physicians, and all other ambulatory health care services.

- Revised Education Programs

- ~~Training programs are offered publicly and privately through technical colleges, universities, community colleges and hospital based certificate programs. Clinical laboratory technicians typically complete their education and training in two years. The usual requirement for an entry level position as a medical or clinical laboratory technician is to possess either an associate degree from a community college, technical college, or junior college or a certificate from a hospital or the Armed Forces. A few technicians learn their skills on the job. Some states require laboratory personnel to be licensed or registered. Licensure of clinical laboratory technicians requires a national certification examination administered through the Board of Certification (BOC) of the American Society of Clinical Pathologists(ASCP). Requirements vary by State and specialty.~~
- *Training programs are offered publicly and privately through technical colleges, universities, community colleges, and hospital-based certificate programs. Medical Laboratory Technicians typically complete their education and training in two years. Typically, the requirement for an entry-level position as a medical laboratory technician is to possess either an associate degree from a community college, technical college, or junior college or a certificate from a hospital or the Armed Forces. A few technicians learn their skills on the job. Some states require laboratory personnel to be licensed or registered. Licensure for medical laboratory technicians requires a national certification examination administered through the Board of Certification (BOC) of the American Society of Clinical Pathologists(ASCP). Requirements vary by state and specialty.*

- Revised Job/Career Description

- ~~Clinical laboratory testing plays a crucial role in the detection, diagnosis, and treatment of disease. Clinical laboratory technicians and medical laboratory scientists perform most of these tests. Clinical laboratory personnel examine and analyze body fluids, and cells. They look for bacteria, parasites, and other microorganisms; analyze the chemical content of fluids; match blood for transfusions; and test for drug levels in the blood that show how a patient is responding to treatment. Technologists also prepare specimens for examination, count cells, and look for abnormal cells in blood and body fluids. They use microscopes, cell counters, and other sophisticated laboratory equipment. They also use automated equipment and computerized instruments capable of performing a number of tests simultaneously. After testing and examining a specimen, they analyze the results and relay them to physicians. Clinical laboratory technicians perform less complex tests and laboratory procedures than technologists do. Technicians may prepare specimens and operate automated analyzers, for example, or they may perform manual tests in accordance with detailed instructions. They usually work under the supervision of medical and clinical laboratory technologists or laboratory managers. Like technologists, clinical laboratory technicians may work in several areas of the clinical laboratory or specialize in just one. Phlebotomists collect blood samples, for example, and histotechnicians cut and stain tissue specimens for microscopic examination by pathologists.~~
- *Medical laboratory testing plays a crucial role in detecting, diagnosing, and treating diseases. Medical laboratory technicians (MLTs) and medical laboratory scientists perform most of these tests. Medical laboratory personnel examines and analyze body fluids and cells. MLTs look for bacteria, parasites, and other microorganisms, analyze fluids' chemical content, match blood for transfusions, and test for drug levels in the blood that show how a patient is responding to treatment. Technologists also prepare specimens for examination, count cells, and look for abnormal cells in blood and body fluids. They use microscopes, cell counters, and other sophisticated laboratory equipment. They also use automated equipment and computerized instruments to perform several tests simultaneously. After testing and examining a specimen, they analyze the results and relay them to physicians. Medical laboratory technicians perform less complex tests and laboratory procedures than technologists do. MLTs may prepare specimens and operate automated analyzers, for example, or perform manual tests according to detailed instructions. They usually work under the supervision of medical laboratory technologists or laboratory managers. Like technologists, medical laboratory technicians may work in*

several laboratory areas or specialize in just one. Phlebotomists collect blood samples, for example, and histotechnicians cut and stain tissue specimens for microscopic examination by pathologists.

- Revised Salary Trends
 - Hourly Salary
 - ~~\$22.38~~
 - ◆ \$23.45
 - Annual Salary
 - ~~\$46,541.83~~
 - ◆ \$48,772.00
 - Salary Trend Details
 - ~~Based on EMSI Forecast from fall 2019~~
 - ◆ Based on EMSI 2021 report, the 2020 median wage in Georgia is \$23.45/hr and the annual salary of \$48,772. The 2020 national median wage is \$26.05/hr and an annual salary of \$54,188.
- Revised Occupational Analysis
 1. Perform laboratory tests on body fluids under the direction of a qualified physician or pathologist.
 1. ~~get syringe~~
 2. ~~get needle~~
 1. Demonstrate proficiency in analyzing preanalytic blood collection processes, specimen processing of blood & body fluids, and taking appropriate actions.
 2. Obtain clinical training in an approved health care facility.
 3. Demonstrate manual dexterity, motor coordination, and vision needed to operate laboratory equipment.
 2. Evaluate and correlate clinical laboratory test results performed on a patient.
 1. ~~Demonstrate the ability to critically think.~~
 1. Demonstrate proficiency in analyzing preanalytic blood collection processes, specimen processing of blood & body fluids, and taking appropriate actions.
 2. Be able to evaluate patient or instrument responses, synthesize data, and draw sound conclusions.
 3. ~~Be able to set up a functioning clinical laboratory in a physician's office or health care facility.~~
 1. ~~Obtain a market analysis for such a facility and obtain qualified testing personnel.~~
 2. ~~Obtain appropriate funding for equipment and supply purchases.~~
 3. ~~Obtain a business license to operate and secure valid state and community licenses. Subscribe to a quality assurance program.~~
- Revised Program Outcomes
 1. The overall outcome of the ~~Clinical~~ Medical Laboratory Technology Program is to provide skilled ~~clinical medical~~ laboratory technicians who perform effectively.
 2. ~~Collecting, processing, and analyzing biological specimens and other substances.~~
 2. Performing analytical tests of body fluids, cells, and other substances.
 3. Recognizing factors that affect procedures and results, and taking appropriate actions within predetermined limits when corrections are indicated.
 4. ~~Performing and monitoring quality control within predetermined limits.~~
 4. Performing preventive and corrective maintenance of equipment and instruments or referring to appropriate sources for repair.
 5. Applying principles of safety.
 6. Demonstrating professional conduct and interpersonal communication skills with patients, laboratory personnel, other healthcare professionals, and with the public.
 7. Recognizing the responsibilities of other laboratory and health care personnel and interacting with them with respect for their jobs and patient care.
 8. Applying basic scientific principles in learning new techniques and procedures.
 9. Relating laboratory findings to common disease processes.
 10. Establishing and maintaining continuing education as a function of growth and maintenance of professional competence.

- Revised Program Curriculum

CLT3: Clinical Medical Laboratory Technology (202212)~ Proposed Changes			
<i>Area I: Language Arts/Communication (3hrs)</i>			
	ENGL 1101	Composition and Rhetoric	3
<i>Area II: Social/Behavior Sciences (3hrs)</i>			
	PSYC 1101	Introductory Psychology	3
<i>Area III: Natural Sciences/Mathematics (7hrs)</i>			
<i>Mathematics Option (3hrs)</i>			
OR	MATH 1111	College Algebra	3
OR	MATH 1101	Mathematical Modeling	3
OR	MATH 1103	Quantitative Skills and Reasoning	3
<i>Chemistry Requirements- Selectv CHEM 1211/1211L OR CHEM 1151/1151L (4hrs)</i>			
	CHEM 1211	Chemistry I	3
	CHEM 1211L	Chemistry Lab I	1
OR	CHEM 1151	Survey of Inorganic Chemistry	3
	CHEM 1151L	Survey of Inorganic Chemistry Lab	1
<i>Area IV: Humanities/Fine Arts (3hrs)</i>			
	XXXX xxxx	Humanities/Fine Arts Selection	3
<i>Program or General Ed Specific Requirements (3hrs)</i>			
	XXXX xxxx	Speech or Other Gen Ed Elective	3
<i>Non-General Education Degree Courses (8hrs)</i>			
	BIOL 2113	Anatomy and Physiology I	3
	BIOL 2113L	Anatomy and Physiology Lab I	1
	BIOL 2114	Anatomy and Physiology II	3
	BIOL 2114L	Anatomy and Physiology Lab II	1
<i>Occupational Courses (46hrs)</i>			
	CLBT MLBT 1010	Introduction to Clinical Medical Laboratory Technology	2
	CLBT MLBT 1030	Urinalysis/Body Fluids	2
	CLBT MLBT 1040	Hematology/Coagulation	5
	CLBT MLBT 1050	Serology/Immunology	3
	CLBT MLBT 1060	Immunochemistry	4
	CLBT MLBT 1070	Clinical Chemistry	4
	CLBT MLBT 1080	Microbiology	5
	CLBT MLBT 2090	Clinical Urinalysis, Serology and Preanalytic Specimen Process Practicum	3
	CLBT MLBT 2100	Clinical Immunochemistry Practicum	4
	CLBT MLBT 2110	Clinical Hematology/Coagulation Practicum	4
	CLBT MLBT 2120	Clinical Microbiology Practicum	4
	CLBT MLBT 2130	Clinical Chemistry Practicum	4
	CLBT MLBT 2200	CLT MLT Certification Review	2
Total Program Hours			73

- Revised External Standards

1. In the ~~Clinical~~ Medical Laboratory Technology program, Practicum/Internship or Clinical courses are based on a clock hour (sixty minutes). Appropriate breaks are included in the clock hour as directed at the Practicum/Internship or Clinical site. One semester credit shall be awarded for a minimum of three clock hours of Practicum/Internship. One hour of credit shall be awarded for 2250 minutes of instructional time.
2. Students who successfully complete the ~~Clinical~~ Medical Laboratory Technology program may be eligible to sit for a nationally recognized certification examination.

3. Programmatic accreditation is granted by The National Accreditation Agency for Clinical Laboratory Sciences (NAACLS) www.nacls.org.

- Revised Program Admission Requirements

Minimum Test Scores

Accuplacer NG Reading:	236
Accuplacer NG Writing:	249
Accuplacer NG Arithmetic:	229
Accuplacer NG QAS:	245
Accuplacer NG Advanced Algebra:	249

Minimum Required Age

NA

High School Diploma or GED Required

For Admission: Yes

For Graduation: Yes

Other conditions for Admission (if any)

Additional conditions may be required by specific clinical affiliates. As an example; American Heart Association Provider CPR certification, physical examination or proof of ability to perform required duties, up-to-date immunizations, criminal background check, and drug screen prior to performing the clinical rotation at the end of the ~~CLT~~ MLT program. Additional information may be provided at each college.

- Revised Program Faculty/Administrative

Order	Description	Type	Quantity
1	Director	Full time	1
2	Instructor	Part -Full time	1
3	Secretary	Full time	1
3	Lab Assistant	Part time	1

Other Specific Staff Resources

Instructors must be certified ~~Clinical~~ Medical Laboratory Scientists.

A2- ~~CLBT~~ MLBT 1010: Introduction to ~~Clinical~~ Medical Laboratory Technology

Revised Course Description

Introduces students to the terms, concepts, procedures, and equipment used in a professional ~~clinical~~ medical laboratory. Topics include: professional ethics and regulatory agencies; laboratory safety, equipment, and techniques; phlebotomy/specimen processing; related lab math, quality control concepts; process improvement; documentation and computer usage; and point of care testing. Practical experience in phlebotomy will be provided in the ~~institution's~~ laboratory and/or the clinical setting.

Revised Pre-Requisites

- Program Admission remained as is
- MATH 1101: Mathematical Modeling was added
- MATH 1103: Quantitative Skills and Reasoning was added
- MATH 1111: College Algebra was added
- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer was provided,
 - Contingent to the program layout determined by each college, programs can select one of the MATH courses listed below as the MATH pre-req requirement.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Describe the methods used by clinical medical laboratories to improve performance.		

A3- ~~CLBT MLBT~~ 1030: Urinalysis/Body Fluids

Revised Pre-Requisites

- BIOL 2113: Anatomy and Physiology I remained as is
- BIOL 2113: Anatomy and Physiology Lab I remained as is
- ~~CLBT MLBT~~ 1010: Introduction to ~~Clinical~~ **Medical** Laboratory Technology remained as is
- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer was provided,
 - Contingent to the programmatic admission requirements and program layout determined by each college, programs can select the listed courses as a pre-req or a co-req.

Revised Co-Requisites

- BIOL 2113: Anatomy and Physiology I remained as is
- BIOL 2113: Anatomy and Physiology Lab I remained as is
- ~~CLBT MLBT~~ 1010: Introduction to ~~Clinical~~ **Medical** Laboratory Technology remained as is
- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer was provided,
 - Contingent to the programmatic admission requirements and program layout determined by each college, programs can select the listed courses as a pre-req or a co-req.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Correlate Correlated principles of routine biochemical and confirmatory tests with disease states.		

A4- ~~CLBT MLBT~~ 1040: Hematology/Coagulation

Revised Pre-Requisites

- "All-Required" statement was removed and replaced with "One-Required."
- BIOL 2113: Anatomy and Physiology I remained as is
- BIOL 2113: Anatomy and Physiology Lab I remained as is
- ~~CLBT MLBT~~ 1010: Introduction to ~~Clinical~~ **Medical** Laboratory Technology remained as is
- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer was provided,
 - Contingent to the programmatic admission requirements and program layout determined by each college, programs can select the listed courses as a pre-req or a co-req.

Revised Co-Requisites

- "All-Required" statement was removed and replaced with "One-Required."
- BIOL 2113: Anatomy and Physiology I remained as is
- BIOL 2113: Anatomy and Physiology Lab I remained as is
- ~~CLBT MLBT~~ 1010: Introduction to ~~Clinical~~ **Medical** Laboratory Technology remained as is
- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer was provided,
 - Contingent to the programmatic admission requirements and program layout determined by each college, programs can select the listed courses as a pre-req or a co-req.

A5- ~~CLBT~~ MLBT 1050: Serology/Immunology

Revised Pre-Requisites

- ~~CLBT~~ MLBT 1010: Introduction to ~~Clinical~~ Medical Laboratory Technology remained as is

Revised Co-Requisites

- ~~CLBT~~ MLBT 1010: Introduction to ~~Clinical~~ Medical Laboratory Technology remained as is

A6- ~~CLBT~~ MLBT 1060: Immunoematology

Revised Pre-Requisites

- ~~CLBT~~ MLBT 1050: Serology/Immunology remained as is
- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer was provided,
 - Contingent to the programmatic admission requirements and program layout determined by each college, programs can select the MBLT 1050 course as a pre-req or a co-req.

Revised Co-Requisites

- ~~CLBT~~ MLBT 1050: Serology/Immunology was added.
- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer was provided,
 - Contingent to the programmatic admission requirements and program layout determined by each college, programs can select the MLBT 1050 courses as a pre-req or a co-req.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Perform Perform selected special techniques, such as titers, elutions, absorptions, prenatal and postnatal transfusions, alloantibody identification, multiple antibody identification, and enzyme techniques.		

A7- ~~CLBT~~ MLBT 1070: Clinical Chemistry

Revised Pre-Requisites

- BIOL 2114: Anatomy and Physiology II remained as is.
- BIOL 2114L Anatomy and Physiology Lab II remained as is.
- CHEM 1151: Survey of Inorganic Chemistry
- CHEM 1151L: Survey of Inorganic Chemistry Lab
- CHEM 1211: Chemistry I
- CHEM 1211L: Chemistry Lab I
- ~~CLBT~~ MLBT 1010: Introduction to ~~Clinical~~ Medical Laboratory Technology remained as is.
- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer remained as is,
 - The chemistry option can be met by successfully completing CHEM 1211/1211L or CHEM 1151/1151L.

Revised Co-Requisites

- BIOL 2114: Anatomy and Physiology II remained as is.
- BIOL 2114L Anatomy and Physiology Lab II remained as is.
- CHEM 1151: Survey of Inorganic Chemistry
- CHEM 1151L: Survey of Inorganic Chemistry Lab
- CHEM 1211: Chemistry I
- CHEM 1211L: Chemistry Lab I
- ~~CLBT~~ MLBT 1010: Introduction to ~~Clinical~~ Medical Laboratory Technology remained as is.

- In order to clarify the flexibility of the programmatic admission requirements determined by each program, the following disclaimer remained as is,
 - The chemistry option can be met by successfully completing CHEM 1211/1211L or CHEM 1151/1151L.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Describe Describe isoenzymes and the clinical implications of abnormal results.		

A8- ~~CLBT MLBT~~ 1080: Microbiology

Revised Pre-Requisites

- ~~CLBT MLBT~~ 1010: Introduction to ~~Clinical~~Medical Laboratory Technology remained as is.

Revised Course Length

- "Internship" description within the Regular Lab category was removed and replaced with "Lab".
- "Practicum" description was added to the Other Lab category to describe the 6hrs listed.

A9- ~~CLBT MLBT~~ 2090: Clinical Urinalysis, Serology and Preanalytic Specimen Process Practicum

Revised Pre-Requisites

- ~~CLBT MLBT~~ 1010: Introduction to ~~Clinical~~Medical Laboratory Technology remained as is.
- ~~CLBT MLBT~~ 1030: Urinalysis/Body Fluids remained as is.
- ~~CLBT MLBT~~ 1050: Serology/Immunology remained as is.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
	Fulfill all federal, state, and local requirements in preparation for testing.	
	Perform serology testing techniques.	
	Relate any marked abnormalities immediately to supervisor.	
	Demonstrate ability to complete documentation in a legible manner and operate a laboratory information computer system.	

A10- ~~CLBT MLBT~~ 2100: Clinical Immunohematology Practicum

Revised Pre-Requisites

- ~~CLBT MLBT~~ 1060: Immunohematology remained as is.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Promote teamwork and use organizational skills in performing duties in the clinical medical laboratory.		

A11- ~~CLBT~~ MLBT 2110: Clinical Hematology/Coagulation Practicum

Revised Pre-Requisites

- ~~CLBT~~ MLBT 1040: Hematology/Coagulation remained as is.
- ~~CLBT~~ MLBT 1050: Serology/Immunology was added.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Promote teamwork and use organizational skills in performing duties in the clinical medical laboratory.		Fulfill all federal, state, and local requirements in preparation for testing.
		Perform serology testing techniques.
		Relate any marked abnormalities immediately to the supervisor.
		Demonstrate the ability to complete documentation in a legible manner and operate a laboratory information computer system.

A12- ~~CLBT~~ MLBT 2120: Clinical Microbiology Practicum

Revised Pre-Requisites

- ~~CLBT~~ MLBT 1050: Serology/Immunology was added.
- ~~CLBT~~ MLBT 1080: Microbiology remained as is.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Promote teamwork and use organizational skills in performing duties in the clinical medical laboratory.		Fulfill all federal, state, and local requirements in preparation for testing.
		Perform serology testing techniques.
		Relate any marked abnormalities immediately to the supervisor.
		Demonstrate the ability to complete documentation in a legible manner and operate a laboratory information computer system.

A13- ~~CLBT~~ MLBT 2130: Clinical Chemistry Practicum

Revised Pre-Requisites

- ~~CLBT~~ MLBT 1050: Serology/Immunology was added.
- ~~CLBT~~ MLBT 1070: Clinical Chemistry remained as is.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Promote teamwork and use organizational skills in performing duties in the clinical medical laboratory.		Fulfill all federal, state, and local requirements in preparation for testing.
		Perform serology testing techniques.
		Relate any marked abnormalities immediately to the supervisor.
		Demonstrate the ability to complete documentation in a legible manner and operate a laboratory information computer system.

A14- ~~CLBT~~ MLBT 2200: ~~CLT~~ MLT Certification Review

Revised Pre-Requisites

- ~~CLBT~~ MLBT 1010: Introduction to ~~Clinical~~ Medical Laboratory Technology was added.
- ~~CLBT~~ MLBT 1030: Urinalysis/Body Fluids remained as is.

- ~~CLBT-MLBT~~ 1040: Hematology/Coagulation remained as is.
- ~~CLBT-MLBT~~ 1050: Serology/Immunology was added.
- ~~CLBT-MLBT~~ 1060: Immunohematology remained as is.
- ~~CLBT-MLBT~~ 1070: Clinical Chemistry remained as is.
- ~~CLBT-MLBT~~ 1080: Microbiology remained as is.