

Texas A&M University-Corpus Christi
Clinical Laboratory Sciences
Student Handbook
Updated 8/14/2023

Overview of CLS

Clinical laboratory scientists (CLS), also known as medical laboratory scientists (MLS) or medical technologists (MT), play a vital role in the management of patients. They constitute the third largest medical profession (following doctors and nurses) and perform complex testing to detect diseases and monitor treatments in patients. About 75% of medical decisions on patients are based on the interpretations of laboratory test results.

The majority (70%) of clinical laboratory scientists (CLS) will work in hospital laboratories. Typical areas in the laboratories include hematology/coagulation, microbiology, chemistry, urinalysis, transfusion medicine and immunology. The remaining CLS (30%) have been employed in industry, clinics, public health, reference and forensic laboratories, education, sales and service of instrumentation.

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Introduction

The CLS Program is designed to prepare students to enter the field of Clinical Laboratory Science or Medical Technology. This is a profession where the theoretical knowledge of biology and chemistry is applied in the diagnosis and treatment of disease and maintenance of health. It requires independent judgement, correlation of test results, and interpretation of findings with respect to normal values.

The program culminates in a baccalaureate degree after three years of undergraduate pre-professional coursework and completion of the 12-month clinical laboratory science program. The professional phase begins with an intensive 4 months 'on campus' phase where students receive instruction in clinical chemistry, urinalysis, hematology, microbiology, immunohematology and immunology. The second phase is a combination of half day rotations or experiences at the clinical sites and half days of 'on campus' instruction in clinical chemistry, molecular diagnostics and hemostasis. The final phase during the summer is primarily clinical rotations at the facilities coupled with 'on campus' training in management, education, research, and case studies. Upon successful completion of the program, students are eligible to take the national certification exam.

Mission Statement

The mission of Clinical Laboratory Science at Texas A&M University-Corpus Christi is to prepare students for a productive career in clinical laboratory science and related fields and to provide students with the intellectual, cultural and ethical foundations necessary to contribute effectively and positively to a changing global community.

Program Goals

The goals of Clinical Laboratory Science at Texas A&M University-Corpus Christi include:

1. Providing the student with a solid foundation of knowledge to build upon through added experience. This foundation should include:
 - An in-depth knowledge of techniques, principles, instruments, and their inter-relationships in the clinical laboratory at hospitals as well as in a variety of other settings
 - The ability to recognize the interdependency of clinical laboratory tests and interpret the validity of the tests through knowledge of the physiological and pathological conditions which affect the tests
 - A sense of pride in the quality of work and in the contribution toward quality patient care
 - A continuing interest in expanding their knowledge and in professional advancement
 - A basic understanding of leadership skills and techniques as applied to the clinical laboratory
 - The educational background necessary to provide the flexibility to adapt to an evolving profession and to accept the challenge of new opportunities
2. Supporting and encouraging intellectual growth of the faculty through applied research and continued education
3. Developing innovative programs, curricula and teaching methods to meet the needs of the diverse student population and the changing profession
4. Providing information, expertise and service to the community

Admission Requirements

Students must complete all prerequisite coursework and any necessary university admission requirements, if applicable, prior to entering the program. The pre-professional curriculum includes core requirements and 16 hrs in biology, including microbiology, immunology, and genetics, and 12 hrs of chemistry, including inorganic, organic, and biochemistry. The professional phase of the program has limited capacity and is competitive. **Students must have an overall GPA of 2.7.** Students must complete an application for the university, provide all transcripts, and a separate application to the CLS program (see website). Students will be accepted in May-August for the Fall semester.

Advanced Placement

Any student may earn credit by examination for CLSC 3200, 3102, 4325, and 4370. Students must enroll in the course and receive permission from the instructor and the program director. The test will be administered by the instructor and must be passed with a grade of 80% or above. A written and practical exam may be given. Students failing the exam must complete the course for a grade.

University Policies

University policies related to student conduct, academic and nonacademic appeals are consistent with those in effect for students enrolled in TAMUCC and are found in the TAMUCC University Handbook 13 STUDENTS (<https://www.tamucc.edu/governance/rules-procedures/index.php#gsc.tab=0>).

Liability Insurance

Students are required to maintain professional liability insurance during their enrollment in the program. A blanket policy is provided through TAMUCC.

Counseling and Health Services

The University Counseling Center offers counseling to students at no cost. Services include both group and individual counseling. All information discussed with the professional counselors is kept in strict confidence. <http://counseling.tamucc.edu/>

The University Health Center is open M, T, Th, Fri from 8:00am-5:00pm and W from 9:00-5:00pm. Various services are available to students at a reasonable cost including physical examinations, vaccinations, drug screens, and minor injuries. <https://www.tamucc.edu/health-center/index.php>

Disability Services

Students with disabilities are encouraged to contact the Disability Services office for a confidential discussion of their individual needs for academic accommodation. It is the policy of TAMUCC to provide flexible and individualized accommodations to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Disability Services Office (CCH 116). The office number is 361-825-5816 and contact email is disability.services@tamucc.edu. Additional information can be found at <https://disabilityservices.tamucc.edu/>.

Safety

Any accident or injury while participating in a scheduled lab, lecture, or practicum activity should be reported immediately to the supervising instructor. It is the policy of the CLS program to make the lab environment a safe place for students, staff, and faculty. There is a lab safety manual housed in the BSL2 laboratory and available online and Blood Borne Pathogen Exposure SOP within the safety manual.

Student Outcomes

1. Master the Entry Level Curriculum, including interpretation, performance, and application of laboratory testing appropriate for graduates.
2. Develop the proficiency to evaluate and analyze problems efficiently to achieve problem resolution.
3. Communicate laboratory information effectively to patients, health care providers, families and physicians.
4. Cultivate the value of continuing professional development within the CLS scope of practice.

Curriculum Sequence

FALL

CLSC 3200	Essentials for Applied Laboratory Sciences	2 SCH
CLSC 3102	Essentials Laboratory for CLS	1 SCH

CLSC 4325	Clinical Chemistry I	3 SCH
CLSC 4420	Hematology	4 SCH
CLSC 4430	Clinical Immunology	4 SCH
CLSC 4370	Clinical Microbiology I	3 SCH

SPRING

CLSC 4326	Clinical Chemistry II	3 SCH
CLSC 4280	Introduction to Clinical Laboratory Science	2 SCH
CLSC 4382	Advanced Medical Laboratory Procedures	3 SCH
CLSC 4297	Professional Practicum I	2 SCH
CLSC 4371	Clinical Microbiology II	3 SCH
CLSC 4120	Hemostasis	1 SCH

SUMMER I

CLSC 4598	Professional Practicum I	5 SCH
CLSC 4200	Professional Skills for CLS	2 SCH

SUMMER II

CLSC 4599	Professional Practicum II	5 SCH
CLSC 4182	Seminar-Clinical Correlations	1 SCH

Grading

Each instructor will supply students with a course syllabus which explains the individual course requirements. Students must pass the lecture and lab or clinical portions with a grade of 'C' or better.

- If a student earns a grade of D, F, or W, in a CLSC course, that course must be repeated and can only be repeated once.
- If a student earns a grade of D, F, or W in two CLSC courses, or twice in the same CLSC course, the student will be dismissed from the program.
- Students receiving a grade of D, F, W, or I in a CLSC course cannot progress to courses for which that course is a pre-requisite.
- Following dismissal, students may apply for reinstatement to the CLSC program, but reinstatement is competitive and based upon space availability.

Outside Employment

Due to the intensive nature of a professional program, students are advised not to work excessive hours and carry a full course load. Students who attempt to work excessive hours (>20 hrs/week) often end up in serious academic difficulty.

Clinical Educational Experience

The program strives to ensure that appropriate clinical sites are available to accommodate all students in the program. The program recognizes that unforeseen changes can occur in a facility's status due to workload constraints, staffing, or other events. The program director will try to locate other clinical sites, but, if no additional slots are available, clinical placement will follow this criteria:

- Students must be in good standing (C or higher in all CLSC courses)

- Eligible students not admitted to clinicals will be admitted to clinicals the following fall semester and will graduate in December

During the Clinical Practicum portion, student schedules may not conform exactly to the University schedule. Students will be evaluated on the psychomotor, cognitive, and affective behaviors and meet passing standards in all three areas. Students in the summer semester will meet once a week for review and exams.

Clinical Schedules

During the spring clinical experience, students will be required to attend rotations on a part-time basis. The typical schedule for clinicals is 7:00am-12:00pm. Some rotations require the students to be present at 6:00 or 6:30am. Summer I and II clinicals will include full-time participation and the typical schedule is 7:00am-2:30pm. Students will be fully informed of these schedules in advance so that arrangements can be made.

Students will not be included in the staffing numbers at the hospitals to meet the service load for the hospital but will participate in general activities of the clinical laboratories to achieve career entry-level skills.

Clinical rotation schedules are arranged for each student with time allotment as follows:

Clinical Chemistry	Routine chemistry	3 weeks
Hematology	Routine hematology & coagulation	2 weeks
Differentials	Routine differentials	1 week
Immunohematology	Routine type, crossmatch, and antibody testing	2 weeks
Microbiology	Routine microbiology/serology	3 weeks
Phlebotomy/Special Chemistry	Phlebotomy and techniques in special chemistry	1 week

Clinical Practicum Requirements

- Criminal Background Check (Castlebranch)
- Urine Drug Screen (Health Services on Campus)
- Current Immunizations
 - PPD (annual)
 - Flu (annual)
 - Tdap, Chickenpox (history or titer), MMR
 - Hepatitis B
 - COVID immunization **may** be required
 - Some facilities have additional requirements and paperwork to be completed before student can begin rotations
- All students must wear Sandollar cards for identification during clinical rotations
- Students are responsible for their own transportation to and from clinical affiliates.

Clinical Affiliates

The TAMUCC Clinical Laboratory Program is currently affiliated with fourteen healthcare facilities. Students are placed at one or more of these sites for their clinical experiences. Students must adhere to the rules and regulations of the clinical affiliates and there may be

some differences as far as courtesy services extended to students. Requests for specific clinical assignment/placements will be considered, but due to scheduling considerations, the program cannot guarantee specific assignment/placements.

All students are responsible for their own travel arrangements to assigned clinical sites. A list of the current affiliates is provided below.

Christus Spohn Health System:

- Christus Spohn Shoreline 600 Elizabeth St. Corpus Christi, Tx 78414
- Christus Spohn South 5950 Saratoga Corpus Christi, Tx 78414
- Christus Spohn Kleberg 1311 E. General Cavazos Blvd Kingsville, Tx 78363
- Christus Spohn Beeville 1500 E. Houston St. Beeville, Tx 78102
- Christus Spohn Alice 2606 Hospital Blvd. Alice, Tx 78405

Citizens Medical Center 2701 Hospital Dr. Victoria, Tx 77901

Corpus Christi Medical Center:

- CCMC Bay Area 7101 SPID Corpus Christi, Tx 78412
- CCMC Doctor's Regional 3315 S. Alameda Corpus Christi, Tx 78411

Corpus Christi Public Health Dept. 1702 Horne Rd. Corpus Christi, Tx 78416

Coastal Bend Women's Center 7121 SPID #200 Corpus Christi, Tx 78412

Driscoll Children's Hospital 3533 S. Alameda Corpus Christi, Tx 78411

Otto Kaiser Memorial Hospital 3349 U.S. 181 Kenedy, Tx 78119

Parkland Memorial Hospital 5200 Harry Hines Blvd. Dallas, Tx 75235

Memorial Hermann Hospital 6411 Fannin St. Houston, Tx 77030

Dress Code

Clinical practicums-students are expected to wear either scrubs (NO navy or red) or casual business attire with their identification badge (Sandollar card). The student must present a professional appearance.

On campus-Laboratory-shorts are not appropriate in the laboratory. Lab coats are worn in the student labs and are not to be removed from the laboratory area. Closed toe shoes are required in the labs. Students must conform to existing safety guidelines when using potentially biohazardous materials.

Confidentiality

Students are expected to maintain confidentiality of patient information. It is imperative that patient information remain confidential and patient rights are protected.

Attendance

The CLS Program is **not** an online program and students are expected to attend **ALL classes, labs, and clinical rotation days as assigned during the times scheduled** unless prevented from doing so by serious extenuating circumstances. Unexcused absences will affect your grades.

Punctuality and dependability are professional traits that students are expected to exhibit.

Students are assigned for a period of 7 hours per day with a break for lunch and other breaks as designated by the facility.

Students will follow the holiday schedule of the Clinical Facility.

In the event of absence from the clinical rotation:

- Call the clinical instructor in the department at the assigned hospital.
- Email or text the faculty member responsible for the clinical rotations.

In the event of a late arrival:

- Contact the clinical instructor as early as possible
- Follow up with an email or text to the faculty member when practical

Absences in the clinical practicum must be made up at the discretion of the hospital and the CLS Program Director. Remediation will be defined by the clinical instructor.

Service Work

Service work performed by a student in a clinical setting must be outside regular academic or clinical training hours, noncompulsory, paid, supervised on site, and subject to employee regulations. Students are not required to perform service work at any clinical affiliate nor will they be used as a substitute for regular laboratory staff.

Professional Organizations

The American Society for Clinical Laboratory Science (ASCLS) is a national professional association representing laboratory personnel. It is dedicated to serving the educational, economic, legislative and social needs of its members. The organization is open to students enrolled in the Clinical Laboratory Science Program. Student membership is approximately \$25.00/year and includes membership in the state and local organizations. Some benefits include discounted fees for workshops and conferences, eligibility for scholarships, and the professional journal, *Clinical Laboratory Science*.

Application for Graduation

Students must apply for graduation and pay appropriate fees by the deadline stated in the university catalog. Students are responsible for checking current deadlines for graduation.

Career Entry Competencies for the Graduate

Graduates of the CLS Program should be prepared to become active functional members of the professional laboratory community while continuing to evolve as a practitioner.

Professionalism

The graduating Clinical Laboratory Scientist is expected to:

- Maintain professional standards in all matters related to the ethics, medical information and job responsibilities.
- Promote public relations for the clinical laboratory by maintaining professional image and conduct.
- Utilize appropriate communication skills for exchanging ideas and information and transmitting laboratory results.
- Recognize the need for continuing education for the application of current scientific/technical knowledge in the clinical laboratory and for participation in professional organizations.

- Demonstrate an awareness of the knowledge/responsibility level of the clinical laboratory scientist and of other laboratory personnel.

Skills

The graduating clinical laboratory scientist is expected to:

- Obtain and process specimens, utilizing appropriate techniques and maintaining integrity of the specimen in relation to the test to be performed.
- Determine the priority of laboratory requests and arrange the workload to provide for optimal patient care and workload efficiency.
- Calibrate and operate instruments and equipment using the appropriate materials and following established protocols.
- Perform preventative maintenance operations on laboratory instruments following established protocols.
- Perform tests according to established methods, utilizing efficient organization and work flow and producing accurate test results.
- Accurately calculate, record, and report test results and associated information, conforming to established procedures and standards.
- Prepare and periodically update procedure manuals.
- Instruct students and/or personnel in the operation and maintenance of instruments and equipment, the performance of methods and procedures and standards.
- Recognize, record and evaluate instrument or equipment malfunctions and discrepancies in test results.
- Prepare and label chemical and biological reagents and materials according to prescribed directions, using proper laboratory techniques and observing safety precautions.
- Monitor acquisition, processing and storage of laboratory supplies.

Knowledge

The graduating clinical laboratory scientist is expected to:

- Recognize correct specimen collection procedures based on test request, analytical system requirements and patient status.
- Identify or state principals of basic laboratory methods.
- Recognize internal and external policies and regulations including medico-legal custodial responsibilities for the acquisition, identification, transport, storage and disposal of specimens.
- Recognize hazardous specimens and materials and process them according to established safety measures.
- Associate basic human physiology and pathophysiology with test results.
- Evaluate the validity of test results by relating them to reference intervals, quality control data, analytical system performance, correlation with other test data and patient status.
- Recognize situations in which additional or confirmation procedures are indicated.
- Demonstrate an awareness of necessity for periodic evaluation of safety manuals, procedure manuals, and instrument maintenance protocols.
- Demonstrate an awareness of the use of basic management principles in the clinical laboratory setting Including:
 - critical pathways and clinical decision making

- performance improvement
- dynamics of healthcare delivery systems as they affect laboratory service
- human resource management to include position description, performance evaluation, utilization of personnel, and analysis of workflow and staffing patterns
- financial management: profit and loss, cost/benefit, reimbursement requirements, materials/inventory management
- Critically evaluate and review published research.

Synthesis

The graduating clinical laboratory scientist is expected to:

- Select, evaluate and implement laboratory test methods
- Develop and monitor quality assurance systems/quality improvement including an instrument maintenance program
- Establish criteria for evaluating the suitability of specimens for the analysis requested.
- Establish a system for providing patients with blood and blood products in accordance with internal and external policies and regulations or standards.
- Establish reference intervals appropriate for the systems utilized and the population served.

Certification

Graduates of the CLS Program at Texas A&M University-Corpus Christi are eligible to take the national examination (Board of Certification through the American Society of Clinical Pathology) for certification as medical laboratory scientists. Most employers require certification for employment. Obtaining the Bachelor of Science degree in CLSC or the post-baccalaureate certification is not contingent on passing a national examination.

American Society of Clinical Pathology (ASCP)
 Board of Certification (BOC)
 33 W. Monroe St., Suite 1600
 Chicago, IL 60603
 Main: 312-541-4999
www.ascp.org/Board-of-certification

Accreditation

The CLS Medical Laboratory Science Program at Texas A&M University-Corpus Christi is fully accredited by the National Accrediting Agency for the Clinical Laboratory Sciences (NAACLS).

NAACLS
 5600 N. River Rd, Suite 720
 Rosemont, IL 60018-5119
 Phone: 773-714-8880
 FAX: 773-714-8886
 Website: www.naacls.org
 Info: INFO@naacls.org

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Essential Requirements for CLS Students

The student must be able to follow the academic conduct set forth by the University Student Code of Conduct (<http://judicialaffairs.tamucc.edu/studentcofc.html>).