

Clinical Laboratory Science Program

Sponsored by California State University, Los Angeles

The program is post-baccalaureate training which prepares graduates for positions as Clinical Laboratory Scientists (CLS). The 52 weeklong program is approved by the California Department of Public Health, Laboratory Field Services. We are accredited by NAACLS (National Accrediting Agency for Clinical Laboratory Sciences).

The Cal State LA Clinical Laboratory Scientist Certificate Program consists of two components: a didactic component and a clinical practical training component. The lecture courses required for this program are offered through the College of Professional and Global Education to students accepted into the program.

The mission of the program is to prepare laboratory professionals with the technical, critical thinking, and management skills that will allow them to function at the highest level in the clinical laboratory, assume leadership roles in their working environment, and become leaders in their profession. In addition, we strive to instill in our trainees a love of continuous learning in and beyond their discipline.

As a licensed CLS, graduates:

- Can perform the full spectrum of diagnostic tests in all departments of a clinical laboratory.
- Will provide information that can assist with the prevention, diagnosis, treatment, and management of disease.
- Can calibrate, maintain, and test on a variety of laboratory instruments.

Career opportunities for Clinical Laboratory Scientist include positions in:

- Hospitals and private clinical labs
- Research facilities, public health, infection control, and compliance departments.
- Biotechnology and specialty laboratories such as blood banks
- Laboratory computer systems

Employment for Clinical Laboratory Scientists has a bright outlook according to the U.S. Bureau of Labor Statistics O*Net Online, with a projected job growth much faster than average due to an increased need for laboratory professionals. Salaries for a CLS start at $80,000 - $90,000 annually in the Los Angeles area.

COLLEGE OF PROFESSIONAL & GLOBAL EDUCATION
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Academic Criteria

- A bachelor's degree (baccalaureate) in biology or equivalent with specific course requirements, received by May of the year the internship begins.
- 16 semester units (24 quarter units) in chemistry, including:
  a. Quantitative analysis or analytical chemistry; and
  b. Clinical chemistry or biochemistry
- 16 semester units (24 quarter units) in biology, including medical, clinical, or pathogenic microbiology, hematology, and immunology.
- 3 semester units (4 quarter units) of physics, mathematics, or statistics.
- Core prerequisites: quantitative analysis or analytical chemistry, clinical chemistry or biochemistry, medical microbiology, hematology, and immunology courses should have a laboratory component (labs are preferred). No more than two of these courses should be online format.
- Prefer at least 4 units of upper division biology laboratory instruction and at least one, and preferably all, of the following courses: physiology, genetics, biostatistics, and a lab class that includes molecular biology techniques.
- A minimum GPA of 2.75 (overall, science + math, and last 60/90 semester, or quarter units) on a 4-point scale. International students must have their transcripts evaluated by the IERF credentials evaluation service and their grades must be converted to a 4-point scale (course by course evaluation).
- Core courses (clinical chemistry, analytical chemistry (quantitative analysis) and biochemistry, hematology, immunology, medical microbiology) must have been completed within seven years of the internship.
- For candidates with foreign degrees whose language of instruction was not English, a minimum 90 IBT, 7 IELTS, or PTE score of 53 or higher or DuoLingo score of 105 or higher is required. IN ADDITION, an upper division course in hematology (with lab) or medical microbiology (with lab) taken in the U.S.A. with a grade of B or better IS REQUIRED.
- Three (3) recommendation forms from upper division/graduate course instructors or work supervisors, with at least one from a professor. (Recommendation form available on https://www.calstatela.edu/page/clinical-laboratory-scientist-certificate)
- Pending application to Laboratory Field Services (https://www.cdph.ca.gov/Programs/OSPHLD/LFS/Pages/CLS-Trainee.aspx#) for a Clinical Laboratory Scientist Trainee License. Final acceptance for admission to program is contingent upon receiving this license.
- Candidates must have U.S. Citizenship or permanent residency in the U.S. to be admitted to the program.

Successful completion of the program leads to a certificate and makes the graduate eligible to take the ASCP Medical Laboratory Scientist board exam to become both CA State licensed and nationally certified and enter into a career in laboratory science. During the program year students spend four days per week at the clinical site laboratory and one day per week in didactic instruction. Students are enrolled in graduate level classes that may be transferrable to appropriate graduate programs; see list below.

Required Courses (19 units):

MICR 5100	Advanced Studies in Hematology	(4 units)
MICR 5200	Advanced Studies in Transfusion Services	(3 units)
MICR 5300	Advanced Studies in Clinical Chemistry	(6 units)
MICR 5400	Advanced Studies in Medical Microbiology	(6 units)

These courses are offered over one 17-week and two 16-week terms. As outlined below, Advanced Studies in Hematology (10 weeks) and Advanced Studies in Transfusion Services (7 weeks) are offered during the first term, Advanced Studies in Clinical Chemistry (16 weeks) in the second term, and Advanced Studies in Medical Microbiology (16 weeks) in the third term.

(Order of instruction subject to change)

CLS Didactic Curriculum

	First Term MICR 5100 and 5200	Second Term MICR 5300	Third Term MICR 5400
Week	Topic	Topic	Topic
1	Phlebotomy including quality assurance. / Organization of blood and blood forming organs	Chemistry methodology / Laboratory mathematics	Specimen Collection / Inoculation / Staining / Media
2	Structure and function of erythropoietic tissue/Introduction to anemias	QC / QA/ Toxicology CA Laboratory Law	Normal flora / Gram positive cocci / Gram negative cocci
3	Hypochromic, microcytic anemias / Macrocytic anemias / Aplastic and hypoplastic anemias	Liver function	Gram negative bacilli - Enterobacteriaceae
4	Intracorpuscular defects of RBCs / Extracorpuscular defects of RBCs	Cardiac function	Nonfermenters / Vibrionaceae / Pasteurellaceae / Other Gram-negative rods
5	Structure and function of leukopoietic tissue / Nonmalignant disorders of WBCs	Body fluid testing / Ions	Gram positive rods / Mycobacteria
6	Myeloproliferative, Myelodysplastic disorders / Leukemias / Lymphomas	Acid base testing / Carbohydrates	Anaerobes / Spirochaetales / Rickettsia / Chlamydia
7	Primary and secondary hemostasis	Urine chemistry / Renal function	Antibiotic susceptibility testing / Mycology
8	Disorders of hemostasis	Urine chemistry / Renal function	Amoeba / Flagellates / Ciliates / Apicomplexa / Microsporidium
9	Review for final exam / Case studies	Genetic testing / Newborn screening	Nematodes / Trematodes / Cestodes
10	Hematology Final Exam	Endocrine Testing	Molecular Diagnostics / Virology
11	Relevant principles and applications of immunology – Innate versus adaptive / Antigen & Antibody structure and function/T cells / Complement	Protein testing / Enzyme testing	Emerging and reemerging pathogens / Serology / Immunology
12	ABO / Rh system	Lipids/Lipoproteins	Serology / Immunology
13	Secretors / Lewis system / Typing/ Crossmatch	Therapeutic drug monitoring / Toxicology	Blood, urine, wound, and other body fluid cultures
14	AHG test / RBC antibodies and antigens / HDN / Compatibility testing	Tumor markers / Autoimmune testing / Research methods	Sputum, Throat, urogenital, and GI cultures
15	Transfusion reactions / Blood component therapy / Donors / Quality control	Review for final exam / Case Studies	Review for final exam / Case studies
16	Laboratory Operations / Education / Management / Review for Final Exam / Case Studies	Clinical Chemistry Final Exam	Microbiology Final Exam
17	Transfusion Services Final Exam		

Clinical Site Affiliates

Adventist Health White Memorial Medical Center (Los Angeles)

Cedars-Sinai Medical Center (Los Angeles)

Children's Hospital of Orange (Orange)

Emanate Health: Queen of the Valley (West Covina) and Intercommunity (Covina) campuses; students spend one-half year at each facility.

Henry Mayo Newhall Hospital (Valencia)

Keck Hospital of USC (Los Angeles)

Los Angeles County, Department of Health Services facilities: Harbor-UCLA Medical Center (Torrance), Los Angeles General Medical Center (Los Angeles), and Olive View-UCLA Medical Center (Sylmar)

Quest Diagnostics, Inc. (West Hills and Sacramento)

Saint Francis Medical Center (Lynwood)

San Antonio Regional Hospital (Upland)

St. Joseph Hospital (Orange)

USC Arcadia Hospital (Arcadia)

USC Verdugo Hills Hospital (Glendale)

Students train in close association with the staff at the various sites, with actual patient samples and learn the procedures in the clinical laboratories. This provides each student with excellent preparation for careers upon graduation. Our clinical sites frequently hire the graduates that they have trained in this program. Placement is not guaranteed.

Students are not allowed to or be scheduled to perform pre-testing, testing, and post testing procedures as replacements for paid laboratory personnel. Any work performed outside of the regularly scheduled student rotation hours requires fair compensation.

Clinical Rotations	
Orientation, Safety and Phlebotomy	3 weeks
Hematology and Coagulation	8 weeks
Urinalysis	4 weeks
Pre-transfusion Procedures (Blood Banking)	4 weeks
Chemistry (Routine and Special)	12 weeks
Serology (Immunology)	4 weeks
Microbiology	9 weeks
Parasitology	3 weeks
Miscellaneous Topics and Review	5 weeks

Application and Admission Procedure

Admission is by application only. Follow the link to the program website for downloadable forms and instructions: http://www.calstatela.edu/page/clinical-laboratory-scientist-certificate-0.

A minimum GPA of 2.75 in both cumulative and science and math is required. Transcripts from all schools attended must be provided along with 3 recommendation forms (see forms on website); at least one of the recommendations must be from a university professor/instructor. A resume and a one-to-two-page letter of interest in CLS must accompany other application materials.

Applications must be complete, and applicants must meet all minimum requirements to be considered for the program. The admission committee, comprised of the program director, education coordinators and faculty involved in the program, reviews all eligible applicants without regard to race, color, religion, national origin, sex, age, or handicap. Top applicants are contacted for a scheduled interview by the selection committee and the education coordinators from the clinical affiliates. A standardized set of questions is asked of all candidates, and ample time is provided for the applicants to ask any questions that they may have.

Student applications are accepted from October 1st of the year preceding the internship until January 15th of the year the internships begins. Selected students are offered interviews in March. Prior to the interviews, students are asked to rank order their clinical site preferences. After the interview, clinical sites are asked to rank order the interviewed candidates. The two lists are reconciled and offers of positions in the program at a specific training site are sent to accepted students shortly after the interview process. Students offered positions must confirm acceptance via email. Training starts in August. Students are required to attend a program orientation before the beginning of the program.

Students must be physically capable of completing all aspects of the training program. Accepted students must have the ability to perform various physical, technical, and occupational skills involving vision, mobility, fine-motor skills and have the ability to communicate effectively in English.

Costs, Student Loans, Work Hours, other Topics

Currently, costs are $675 per unit ($12,825 total) with additional expenses required for liability insurance and proof/provision of health insurance, various immunizations (Hepatitis B, measles, mumps, varicella, Tdap, COVID-19 vaccination) and proof of TB skin testing/clearance. Some clinical sites have additional requirements such as CPR training, which will also be at the students' expense. Students are required to purchase textbooks for personal use (no more than $450). Some training/study materials may be provided by the clinical sites at no charge. Parking permits will need to be purchased if attending classes at the University (typically $242 per term at Cal State LA). Single day parking permits may be purchased each day of class for about $6/day.

Participation in the Federal Guaranteed Student Loan program is available; a FAFSA application must be filed by interested students. Students provide their own housing; accommodations are readily available in the surrounding communities. Meals during the training day may be available in hospital cafeterias or students may bring meals from home.

Job related illnesses can be treated in the particular facility's emergency room for a fee. Any absences must be made up at the end of the training year.

Students are provided with protective garments at each clinical site. Appropriate, neat, street attire with closed-toe shoes is required in the laboratories.

Because the time commitment required for successful training is great, students must strongly consider how their non-programmatic obligations may impact their participation.

Clinical hours vary from section to section depending on the laboratory. Typical training days begin at 7:00 or 7:30 a.m. and end at 3:30 or 4:00 p.m. Students are not required to train weekends or hospital holidays. Some clinical sites are able to offer supplemental employment if so desired, but it is NOT required as an integral part of training.

NAACLS Accreditation: Contact information

The CLS program is accredited by the National Accrediting Agency for Clinical Laboratory Science (NAACLS). For more information, you can contact NAACLS directly at: 5600 N. River Road, Suite 720, Rosemont, IL 60018 or by calling (773) 714-8880. You can also reach them on the web by e-mailing info@naacls.org or by visiting www.naacls.org.

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