



SCHOOL OF MEDICAL TECHNOLOGY PROSPECTIVE STUDENT INFORMATION

The information on this page is subject to change and is updated at the close of each application cycle AND goes into effect immediately for the next application cycle. It is the responsibility of the applicant to stay up to date with the stated requirements for the cycle in which they are applying.

The Profession:

Clinical Laboratory Scientists (Medical Laboratory Scientists) are qualified by academic and applied science education to provide service or research in the clinical laboratory and other areas of healthcare delivery systems. Clinical Laboratory Scientists are professionals that develop, perform, analyze, interpret, troubleshoot, evaluate, and assure the accuracy and validity of laboratory information in all phases of testing (pre-analytical, analytical, and post-analytical). They are also involved in regulatory compliance issues, education of fellow laboratorians and other healthcare professionals and quality assurance/performance improvement processes.

It is essential that the laboratory professional possess excellent written and verbal communication skills as well as working reliably, quickly, and carefully under pressure. Ethical and moral attitudes and principles are necessary for gaining and maintaining the confidence and respect of patients, other healthcare professionals and the community.

The Medical Center:

Established in 1862, San Bernardino County Medical Center moved to a new location and became Arrowhead Regional Medical Center (ARMC) in 1999. ARMC is an acute care teaching hospital committed to the education and training of medical students, residents, nurses, nurse practitioners, certified nurse anesthetists, physician's assistants, and radiology technicians as well as clinical laboratory scientists.

This 456-bed acute care facility provides a full range of services including primary and specialty care, trauma and emergency care, ancillary and home health services, behavioral health, and a comprehensive women's health program. The facility's burn center is the only major burn center in a four-county area.

The Program:

The School of Medical Technology of Arrowhead Regional Medical Center operates within the Clinical Laboratory. Since the program's re-accreditation in 2007, our students have a pass rate of 100% on the ASCP MLS certification exam as well as a 100% graduation and placement rate. The laboratory performs approximately 4.1 million tests annually, providing students with a diverse experience during their training. The Laboratory is accredited by the College of American Pathologists and the California Department of Public Health. The Program is accredited by the California Department of Public Health, Laboratory Field Services, and the National Accrediting Agency of Clinical Laboratory Sciences [(NAACLS), 5600 North River Road, Ste.720, Rosemont, IL, 60018-5119. Phone (772)-714-8880; www.nacls.org].

Program Mission

The mission of the School of Medical Technology is to provide an exceptional learning environment to our students such that they can perform with a high degree of accuracy, reliability, and professionalism in delivering high quality compassionate healthcare to the community.

Program Goals

The goal of the School of Medical Technology is to produce medical laboratory science professionals who, with experience, can investigate, evaluate, trouble-shoot, execute and implement procedures utilizing a high degree of independent judgment and consult where appropriate with other members of the health care team.

Program Objectives

Upon graduation, students should be able to demonstrate the following entry-level competencies:

1. Establish procedures for the collection and processing of biological specimens for analysis.
2. Display knowledge of testing procedures and methodologies including the theoretical basis, applications, and limitations of procedures in all areas of the laboratory.
3. Perform and evaluate analytical tests with proficiency and accuracy on body fluids, cells, and body products.
4. Correlate laboratory findings with the pathophysiology of the patient.
5. Evaluate data generated for possible discrepancies and confirm abnormal results.
6. Calculate and interpret test results from laboratory data including statistical analysis for quality assurance. Institute proper procedures to maintain accuracy and precision.
7. Investigate and evaluate common laboratory problems and identify suitable solutions related to equipment malfunctions, quality assurance, unacceptable patient specimens, laboratory safety and management in all areas of the laboratory.
8. Recommend new techniques, instruments, and procedures in terms of their usefulness and practicality within the context of the laboratory's personnel, equipment, space, and budgetary resources.
9. Exhibit professional conduct and interpersonal communications skills with patients, peers, and other health care professionals.
10. Motivate support personnel and peers in their acquisition of knowledge, skills and attitudes and professional development.
11. Endeavor to expand professional competence through membership in professional organizations and participation in continuing education activities.
12. Commit to quality patient care and participate as a member of the health care team.

CONTACT INFORMATION

Please send correspondence, applications, and program inquiries to:

May Orf
Program Director
Arrowhead Regional Medical Center
Department of Laboratory Medicine, School of Medical Technology
400 North Pepper Avenue
Colton, CA 92324-1819

(909) 580-0069
orfmay@armc.sbcounty.gov

ADMISSION PROCESS

The program is accredited for 3 students annually.

Applications should be submitted between May 1 and November 1, 2022, for the August 2023 class.

Application requirements:

1. The ARMC School of Medical Technology application file must include all the following:
 - A. A completed application packet to this program, including resume and personal statement or letter of intent.
Application packet can be obtained by email: orfmay@armc.sbcounty.gov
 - B. Official college transcript(s) for all coursework.
Those students who have completed their education in a foreign country and will not be awarded a U.S. baccalaureate degree are required to submit a transcript evaluation verifying U.S. baccalaureate degree equivalency. If the transcript is from a foreign school, an official copy of the transcript evaluation must be included.
 - C. Two references: that addresses the applicant's academic or professional abilities, proficiency and integrity. No form is provided.
References can be mailed or emailed **on letterhead** to May Orf orfmay@armc.sbcounty.gov
 - D. The California State Trainee's license number or date that application for trainee's license was submitted.

ALL documents may be submitted electronically including official transcripts and letters of references if submission is directly from the originating source.

2. An interview will be necessary prior to selection. If the number of student applications is large, not all applicants will be interviewed. Applicants will be notified if an interview is requested.

Student Selection:

Applicants will be interviewed in February for the August class with acceptance notification via email and/or mail in March. A written (email or paper) reply of acceptance is required within two weeks of notification/receipt of the offer for the student position.

The School of Medical Technology is non-discriminatory with respect to race, color, creed, age, gender, or national origin in the recruitment of students.

The Admission Committee ranks the candidates based upon:

Completion of all requirements

Grade Point Average (overall GPA and prerequisite coursework)

Whether student's GPA improved over time

Prerequisite courses completed within the last three years

Work experience (related to laboratories)

Letters of recommendation

Personal statement or letter of intent

Motivation and institutional fit (as determined from interviews)

Ability to communicate (verbally and in writing) and comprehend English

ADMISSION REQUIREMENTS

Academic requirements:

Applicants must satisfy the academic requirements of the State of California Department of Public Health, Lab Field Services, the National Accrediting Agency for Clinical Laboratory Science (NAACLS), and Arrowhead Regional Medical Center's School of Medical Technology program prerequisites, denoted by (ARMC).

1. **BACCALUREATE DEGREE** from a United States accredited college/university (or evaluated foreign equivalent) which includes the following coursework:

Chemistry: 16 semester (24 quarter) units. This must include biochemistry, **and** clinical, quantitative, or analytical chemistry.

Biological Science: 18 semester (27 quarter) units. This must include hematology, immunology, medical microbiology, medical microbiology laboratory corequisite (ARMC), genetics (ARMC), and human physiology (ARMC).

Physics: 3 semester (4.5 quarter) units. This must include “instruction in” principles of light and electricity.

Mathematics: Statistics or Biostatistics is required (ARMC).

The courses in chemistry and the biological sciences must be acceptable toward a major in those fields, or equivalent. Survey or remedial courses do not qualify as prerequisites.

Recommended, but not required, courses include human anatomy, molecular biology, parasitology, medical mycology, virology, medical terminology, urinalysis & body fluids, education/management courses, and computer science.

We consider applicants with a minimum grade point average (GPA) of 2.7 based on A = 4.

Academic requirements must be updated if the college degree was granted three or more years prior to submission of an application to this program. To update academic requirements, a minimum of 2 courses listed above as required prerequisites must be successfully completed within three years of applying to the program.

Coursework must be completed by the December before the commencement of the program, or your application will not be considered for that year. *For example, if applying for August 2023 class, a completed application due November 1, 2022, but a final grade for courses in progress must be completed by December 31, 2022, to be counted towards that cycle.*

Official transcripts must be submitted from the academic institution directly to the Program for verification of prerequisite courses. If the transcript does not contain the specific courses listed for the “instruction in”, the Chair of the Department may write an official letter verifying the course content. This letter must be submitted in addition to the transcript to satisfy the requirements for academic verification and subject to approval by the admissions committee.

2. CALIFORNIA CLINICAL LABORATORY TECHNOLOGIST TRAINEE'S LICENSE

This license is required prior to commencement of the program. The application for the trainee's license must be completed online at [CDPH CLS Trainee License](#). The current fee will be listed on the website.

Official transcripts must be submitted from the academic institution directly to Laboratory Field Services. If the transcript does not contain the specific courses listed for the "instruction in", the Chair of the Department may write an official letter verifying the course content. This letter must be submitted in addition to the transcript to satisfy the state requirements for licensure.

Laboratory Field Services - CLS Trainee Program
850 Marina Bay Parkway, Bldg. P 1st Floor
Richmond, CA 94804
(510) 620-6403 or (510) 620-3800

Those students who have completed their education in a foreign country and will not be awarded a U.S. baccalaureate degree are required to submit a transcript evaluation verifying U.S. baccalaureate degree equivalency.

CDPH - LFS will accept educational transcript evaluations completed by "Current Members" of the National Association of Credential Evaluation Services (NACES), and "Endorsed Members" of the Association of International Credential Evaluators, Inc. (AICE).

Evaluations AACRAO will be accepted only if completed before August 15, 2016. Please use the links below to view the "Current" and "Endorsed" members of NACES and AICE.

<http://www.naces.org/members.html>

<http://aice-eval.org/members/>

Students are encouraged to apply for a trainee license as early as possible. The trainee license must be obtained before the start of the program. It does not have to be obtained before application to the program.

ESSENTIAL FUNCTIONS

Students must be able to achieve the observational, physical, communication, intellectual and behavioral function listed below in such a way that they will not endanger themselves, other students, laboratory and hospital employees or patients.

Essential Observational Requirements:

- a. Observe laboratory demonstrations in which biologicals are tested for their biochemical, immunological, microbiological, and hematological components.
- b. Characterize the color, odor, clarity and viscosity of biologicals, reagents, or chemical reaction products.
- c. Employ a binocular microscope to discriminate among the structural components and color (hue, shading and intensity) of different microscopic specimens.
- d. Read and comprehend text, numbers and graphs displayed in print and on a video monitor.

Essential Physical Requirements:

- a. Move freely and safely around the laboratory.
- b. Reach laboratory work surfaces and shelves, patients lying in hospital beds or seated in specimen collection furniture.
- c. Perform moderately taxing continuous physical work, often requiring prolonged sitting or standing over several hours.
- d. Maneuver phlebotomy equipment to safely collect appropriate laboratory specimens from patients.

- e. Control laboratory equipment (i.e., pipettes, inoculating loops, test tubes) and adjust instruments to perform laboratory procedures.
- f. Use electronic keyboards to operate laboratory instruments and to calculate, evaluate, and transmit laboratory data.

Essential Communication Requirements:

- a. Read and comprehend technical and professional materials
- b. Follow written and verbal instruction to perform laboratory procedures correctly and independently.
- c. Clearly instruct patients prior to specimen collection.
- d. Communicate with faculty members, fellow students, staff, and other health care professionals.
- e. Prepare and take paper, computer, and laboratory practical exams.

Essential Intellectual Requirements:

- a. Possess the intellectual skills of comprehension, measurement, mathematical calculation, reasoning, integration, analysis, comparison, self-expression, and criticism.
- b. Exercise sufficient judgment to recognize and correct performance.

Essential Behavioral Requirements:

- a. Manage use of time and organize actions to complete professional and technical tasks within realistic time constraints.
- b. Possess the emotional health necessary to effectively employ intellect and exercise appropriate judgment.
- c. Provide efficient professional and technical services while experiencing the stresses of heavy workload and a distracting environment.
- d. Display flexibility and creativity to adapt to professional and technical change.
- e. Recognize potentially hazardous materials, equipment and situation and proceed safely to minimize risk of injury to patients, self, and nearby people.
- f. Adapt to working with unpleasant biologicals.
- g. Support and promote the activities of fellow students and other health care professionals.
- h. Display honesty, compassion, ethics, and responsibility. The student must be forthright about errors or uncertainty.
- i. Critically evaluate his/her own performance, accept constructive criticism, and look for ways to improve.
- j. Evaluate the performance of fellow students and tactfully offer constructive comments.

Other Student Policies (such as student rules and causes for dismissal) are available upon request from the Program Director.

FINANCES & HEALTH

No tuition is charged. No financial aid is available.

A list of required texts will be provided to students upon acceptance into the program. A subscription to Media Lab's LabCE and Case Simulators will be required upon acceptance into the program.

Additional reference textbooks are available for loan as needed during the student year.

Students (lab interns) are employees of the County of San Bernardino and are paid for 40 hours per week. (Approximately minimum wage).

A pre-employment physical, drug screen and background check are required. This is paid for and scheduled by the County of San Bernardino. Vision, dental and medical insurance are available.

Acceptance as a student is contingent upon passing the physical, drug screen and background check.

DIDACTIC AND APPLIED CLINICAL TRAINING

Students rotate through all areas of the clinical laboratory during the 12-month (40 hrs. per week) training program. Students are lectured in each discipline of laboratory medicine (5-7 hrs. per week) and gain applied clinical experience by rotations through each discipline where they work one-on-one with experienced clinical laboratory scientists. Class attendance is mandatory. Reading assignments and evaluations are given over both the lecture and applied clinical material. Records of progress are kept for each student.

Sick leave is available. Students must keep the program director and applied clinical instructors informed of any absences due to illness or other situations. It is the responsibility of the student to make up any missed lecture material and/or exams. Any abuse of leave, absence on an exam day or extended sick leave may result in the need to produce a physician's excuse for any subsequent absence.

The program's rigorous nature makes it necessary for students to dedicate daily time for studies. Consequently, we strongly advise against outside employment.

The program recognizes the following holidays: Martin Luther King, President's Day, Memorial Day, Fourth of July, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Eve, New Year's Eve, New Year's Day. If the holiday falls on a weekend, the school will observe ARMC'S designated holidays.

EVALUATIONS

1. Didactic evaluations are noted on individual course syllabi. Graded evaluations will be returned within one week of completion. Students must receive a cumulative score of 70% or better to pass.
2. Applied clinical rotations are evaluated based upon satisfactory achievement of psychomotor (performance), affective (valuing) and cognitive (knowledge) objectives. Details are noted in individual syllabi. Students must receive a cumulative score of 70% or better to pass.
3. A student's final grade for a given course is based on:
50% didactic evaluations (exams, homework, quizzes, worksheets etc.)
50% clinical evaluations, which includes psychomotor, cognitive, and affective objectives.
Details are given in individual course syllabi.
A= 90-100%
B= 80-89%
C= 70-79%
Below 70% is considered failing.
4. Students must pass (70%) both the didactic and applied clinical portion of each course (Education and Management are didactic only) in the curriculum.
5. Final grade is for each course is maintained in the student's permanent record
6. It is essential that anyone considering a career in the healthcare field demonstrate honesty and integrity in their academic and professional life. Therefore, cheating will not be tolerated and is ground for immediate dismissal from the Program.

Criteria for Progression and Completion of the Program

Students who meet the minimum stated levels of academic achievement, applied clinical performance and affective behaviors will progress and complete the program.

If unsatisfactory scores are obtained on an exam:

1. The student will have only two opportunities to retake exams in which they have not scored higher than 70% in each subject area. Retake exam scores will be averaged with the initial score to determine the value used to calculate the cumulative average.

- a. Counseling will be scheduled with the Program Director prior to the retake exam.
 - b. An improvement program may be implemented for the student.
2. If a student's cumulative evaluation average falls below 70% in a subject area, the student will be placed on academic probation.
 - a. A conference will be scheduled with the Program Director.
 - b. An improvement program will be implemented for the student and monitored.
 - c. The student will be dismissed from the program if s/he fails to demonstrate the required improvements discussed in the conference.
3. A student will be dismissed from the program if their final cumulative average for a given didactic or applied clinical rotation is below 70%.

Gross misconduct will be grounds for immediate dismissal on the first offense. The definition of gross misconduct is consistent with the personnel rules and human resource policies for ARMC employees.

Withdrawal from the program:

Students in Arrowhead Regional Medical Center's School of Medical Technology may elect to withdraw from the program at any time by submitting written notification of withdrawal to the Program Director stating the reason for withdrawal. A School of Medical Technology Withdrawal Form can be obtained from the Program Director.

The Program Director will request an exit conference with the student to:

1. Assure that the student's request for withdrawal does not arise from a resolvable issue.
2. Complete any necessary paperwork (separation report and employee position transaction form).
3. Turn in any Program equipment or materials that the student may have in their possession.
4. The Withdrawal Form will be placed in the student's file.

GRADUATION AND CERTIFICATION

Arrowhead Regional Medical Center presents a certificate to the student upon satisfactory completion of the entire program (36 credit hours). The granting of the certificate is not contingent upon passing an external certification exam. The graduate is now eligible to take a certifying examination approved by the State of California and/or the certification examination of the national ASCP Board of Certification for Medical Laboratory Scientists.

CLINICAL AND DIDACTIC FACULTY

Medical Director: Carolyn Leach M.D.

Program Director: May Orf MS, CA CLS, MLS(ASCP)^{CM}

IMMUNOHEMATOLOGY (5.0 hours) *May Orf MS, MLS(ASCP)^{CM}*

History of transfusion. Fundamentals of blood group immunology/genetics. Study of major blood group systems, pre-transfusion testing and antibody identification techniques. Hemolytic disease of the newborn. Blood collection, donor testing and component preparation in the donor facility. Transfusion practices for blood and blood products. Transfusion reactions, transfusion transmitted diseases and medicolegal aspects of transfusion.

CHEMISTRY (7.0 hours) *Rachelle Wiggan PhD, CLS, MLS(ASCP), Tiffany Cudog MLS(ASCP)^{CM},*

May Orf MS, MLS(ASCP)^{CM}

Equipment and methodologies used in the analysis of specific chemicals found in the body. Calculations used in clinical chemistry. Clinical chemistry methodologies and clinical significance with focus on fluids and electrolytes, acid-base balance, renal function, lipoproteins, lipids, cardiovascular disease, liver, and gastric function, pancreatic, thyroid, adrenal, pituitary, tumor markers, maternal and fetal development, therapeutic drug monitoring and toxicology. Analysis of body fluids.

HEMATOLOGY / COAGULATION / URINALYSIS (8.0 hours) *Billie Burch MT(ASCP), Hyuk (Jae) Sung, MT(ASCP), May Orf MS, MLS(ASCP)^{CM}, and Brandon Jacoby MLS(ASCP)^{CM}*

Examination of normal hematologic physiology, hematopoiesis, and hemostasis. Introduction to quality control and quality assurance. Theory and background of laboratory procedures used in diagnosis and treatment of hematologic and other diseases. Discussion of red cell, white cell, platelet, and hemostatic disorders. Pathophysiology of hematologic malignancies. Morphology of body fluids.

Urinalysis and its application in the diagnosis of renal, systemic, and metabolic diseases. Basic microscopy is also covered.

MICROBIOLOGY (10.0 hours) *Daniel Berga MS, MLS(ASCP)*

Discuss mechanisms and pathology of diseases caused by living agents. Quality control of instruments, reagents, antibiotics, and media. Discussion of bioterrorism. In depth study of the major groups of pathogenic virus, bacteria, rickettsia, mycoplasma, and mycobacteria: their epidemiology, morphology, clinical identification, and control. The role of Molecular diagnostics in the clinical laboratory will also be discussed.

Classification and pathogenesis of human parasites. Discussion of life cycles, clinical features, infective and diagnostic stages.

Review of terminology. Classification, identification and pathogenesis of medically important fungi and yeasts.

SEROLOGY (3.0 hours) *May Orf MS, MLS(ASCP)^{CM}*

Fundamentals of humoral and cell-mediated immunity. Plasma constituents and serum protein electrophoresis. Immunologic laboratory tests as tools for patient care. Etiology, epidemiology, symptoms, diagnostic evaluations, treatment and prevention of autoimmune diseases, syphilis, hepatitis, HIV/AIDS, bacterial, viral, fungal, and parasitic infections

MANAGEMENT & LEADERSHIP / EDUCATION (1.0hrs) May Orf MS, MLS(ASCP)^{CM}

Basic educational terminology. Characteristics of an effective instructor. Describe and contrast instructional methods and elements needed to create a successful environment for clinical education. Discuss the three domains of learning, taxonomy levels for cognitive domain and purposes of objectives. Evaluation of learner performance: methods and effective exam questions.

Principles and practices of quality assurance/quality improvement applied to all components of laboratory services. Application of governmental regulations applied to laboratory practice. Principles and application of interpersonal and interdisciplinary communication, ethics, team-building skills, and professionalism. Principles of research. Dynamics of healthcare delivery systems. Evidence based practice. Human resource and financial management.

ORIENTATION/SAFETY/INFORMATION MANAGEMENT (1.0 hrs.) May Orf MS, MLS(ASCP)^{CM}

Familiarize students with the philosophy and policies of ARMC and the clinical laboratory. Discuss basic elements, applications, and correct usage of the laboratory information system. Review of fire, safety, and infection control policies. Location and use of laboratory safety equipment. Recognition, reporting and documentation of laboratory hazards. Discussion of pre-analytic, analytic, and post-analytic variables that affect laboratory services. Discussion of common methodologies employed in the clinical laboratory and laboratory math.

PHLEBOTOMY (1.0 hrs.) May Orf MS, MLS(ASCP)^{CM} and Diamond Whiting, CPT1

Identify components and professionals of the health care delivery system and the services each provides. Identify each laboratory specialty area and the specimen requirements of the most frequent tests performed in each area. Define and use pertinent medical and anatomic terminology. Discuss and evaluate safety and infection control and quality assurance. Discuss pre-analytical variables in the scope of laboratory testing. Discuss requirements of collection, preservation, transport and processing for serum, urine, and other biological fluids. Review modes of action and appropriate use of additives used in blood collection. Define proper phlebotomy technique and puncture site(s) for both venous and skin punctures and review possible complications.