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SCHOOL OF MEDICAL TECHNOLOGY PROSPECTIVE STUDENT INFORMATION

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 well, 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 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 Regional 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 1.5 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, Lab 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.naacls.org].

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Program Mission

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

Program Goals

The goal of the School of Medical Technology is to produce medical technology professionals who, with experience, can investigate, evaluate, trouble-shoot, execute and implement procedures utilizing a high degree of independent judgment and to 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 supportive 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.

ADMISSION REQUIREMENTS

Academic requirements:

Applicants must satisfy the academic requirements of the State of California Department of Public Health, Lab Field Services and the National Accrediting Agency for Clinical Laboratory Science (NAACLS) (5600 North River Road, Ste.720, Rosemont, IL, 60018-5119. Phone (773)-714-8880).



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1. BACCALUREATE DEGREE in biological science or its equivalent from a United States accredited college/university which includes the following coursework:

CHEMISTRY: 16 semester (24 quarter) units. This must include biochemistry and clinical or analytical chemistry.

BIOLOGICAL SCIENCE: 18 semester (27 quarter) units. This must include immunology, medical microbiology, genetics or molecular diagnostics, anatomy/physiology and hematology.

MATHEMATICS: Statistics is required. Computer science recommended.

PHYSICS: 3 semester (5 quarter) units. This must include "instruction in" principles of light and electricity.

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 parasitology, medical mycology, virology and education/management.

Academic requirements must be updated if the college degree was granted seven or more years prior to the application to this school. At least two of the required prerequisites in chemistry or biological sciences must be successfully completed within seven years of applying to the program.

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

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 <http://www.cdph.ca.gov/programs/lfs>. The current fee will be listed on the application.

California Department of Public Health Laboratory Field Services
850 Marina Bay Parkway, Bldg. P, 1st Floor
Richmond, CA 94804-6403
(510) 620-6403 or (510) 620-3800

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.



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.

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 completed before August 15, 2016 will only be accepted if completed by AACRAO. 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.



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- 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 correctly and independently perform laboratory procedures.
- 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 in order 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 in order 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.



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ADMISSION PROCESS

Applications should be submitted by November 1, 2018 for the August 2019 class. The program is accredited for 3 students annually.

Classes for 2019 begin: August 5, 2019

Application requirements:

- 1. The ARMC School of Medical Technology application file must include:
A. An official college transcript.
B. Two references: At least one must be from a college/university science professor...
C. The California State Trainee's license number or date that application for trainees license was submitted.
D. An application to this program which can be obtained by emailing the program director.
2. An interview will be necessary prior to selection.

Student Selection:

Students will be interviewed in January or February for the August class with notification by email and/or mail in March. A written (email or paper) reply of acceptance is required within two weeks of receipt of the letter offering the position. The School of Medical Technology is non-discriminatory with respect to race, color, creed, age, sex or national origin in the recruitment of students.



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The Admission Committee ranks the candidates based upon:

- School Grade Point Average (overall and science)
- Coursework completed and grades in relevant courses
- Whether student's GPA improved over time
- Required courses completed within the last three years
- Work experience (related to laboratories) within the past two years
- Letters of recommendation
- Motivation and institutional fit (as determined from interviews)
- Ability to communicate in English

DIDACTIC AND APPLIED CLINICAL TRAINING

Students rotate through all areas of the clinical laboratory during the 12 month (40hrs per week) training program. Students are lectured by pathologists and clinical laboratory scientists in each area of laboratory medicine (5-7 hrs. per week) and gain applied clinical experience by rotations through each section 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, if necessary. 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 arrangements with the instructors for make-up material. Any abuse, 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 Years Eve, New Year's Day. If the holiday falls on a weekend, the school will observe ARMC'S designated holidays.



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CLINICAL AND DIDACTIC FACULTY

Medical Director: Carolyn Leach M.D.

Program Director: Ramona Fox, MS, MT(ASCP)

IMMUNOHEMATOLOGY (5.0 hours) Matthew Katus M.D., Ramona Fox, MS, MT(ASCP) and May Orf, MS, MLS(ASCP)

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) Carolyn Leach M.D., Lisa Chesonis MT(ASCP) and Rachelle Wiggan PhD, CLS, MLS(ASCP)

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/UA (8.0 hours) Ellen Ko M.D. and Billie Burch MT(ASCP)

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) and Janice Caceres CLS, 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.



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SEROLOGY (3.0 hours) Mark Seifert M.D., May Orf, MS, MLS(ASCP) and Ramona Fox, MS, MT(ASCP)

History of immunology. 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

EDUCATION/MANAGEMENT (1.0hrs) Ramona Fox, MS, MT(ASCP) and May Orf, MS, MLS(ASCP)

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. Critical pathways and clinical decision-making. Dynamics of healthcare delivery systems and performance improvement. Human resource and financial management.

ORIENTATION/SAFETY/INFORMATION MANAGEMENT (1.0 hrs) Ramona Fox, MS, MT(ASCP)

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.

PHLEBOTOMY (1.0 hrs) Ramona Fox, MS, MT(ASCP)

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 anatomical 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.



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EVALUATIONS

- 1. Didactic evaluations are noted on individual course syllabi. The student will receive and review the final examination within two weeks of completing a course. Students must receive a grade of 'C' (usually 70%) or better to pass. One make-up examination may be scheduled to remove a failing exam score. These make-up exams will be scheduled in an appropriate length of time and the student must achieve an averaged score of over 70%.
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 'C' (usually 70%) or better to pass. The student will receive and review their grade within two weeks of completing the applied clinical rotation.
3. 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 will result in a failing grade for that assignment or exam.

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 two sequential lecture exams, or one lecture exam and one applied clinical area, the student will be placed on probation. The significance of this status is as follows:

- 1. A conference will be scheduled with the Program Director and/or Department Supervisor. An improvement program with conditions and time limits will be implemented for the student. Weekly evaluations will be completed to monitor student progress.
2. The student will be dismissed from the program if s/he fails to demonstrate the improvement required in the program implemented in step 1 or
3. The student will be dismissed from the program upon attaining an additional unsatisfactory (<70%) evaluation in any subsequent applied clinical rotation or didactic series while on probation.

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.

Finances and Health:

No tuition is charged.

A list of required texts will be provided to students 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).



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No financial aid is available.

A pre-employment physical and background check is required. This will be scheduled for you. The County of San Bernardino pays the premiums for dental and medical insurance.

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, employee position transaction form and badge deactivation form).
3. Turn in any Program equipment or materials that the student may have in their possession.

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 eligible to take a certifying examination approved by the State of California and/or the certification examination of the national ASCP Board of Registry for Medical Laboratory Scientists.

Please send all correspondence, inquiries and applications to:

Ramona Fox, MS, MT (ASCP)

Program Director

School of Medical Technology

Arrowhead Regional Medical Center Clinical Laboratory
400 North Pepper Avenue
Colton, CA 92324-1819
(909) 580-0069
foxr@armc.sbcounty.gov