

Slide 1. Hello, and welcome to the Des Moines Area Community College (DMACC) Medical Laboratory Technician (MLT) Information Session. My name is Karen Campbell, and I am the Chair of the program. I will be going over some of the key points about the DMACC MLT program, as well as the clinical lab field in general. At the end of the presentation, I will cover potential impacts to our classes, labs, and clinical rotations due to COVID-19.

Slide 2. First of all, what is an MLT? An MLT is a health care professional whose main job is to perform high complexity testing in a clinical or hospital laboratory. Many MLTs prefer tasks over people or over having patient contact. This does not mean they don't like people, but we sometimes joke that MLTs are not really "people people"; rather, they are detail oriented, can generally follow a procedure like following a recipe, and enjoy the detective work of medicine. MLTs test blood, urine, other bodily fluids, and body parts for the presence or absence of diseases. They use microscopes to identify blood cells, as well as identify other microscopic organisms in urine and various body sites. Microscope use is very prevalent in most hospitals, although the use of computer screens to project images of cells, bacteria and other organisms is becoming more common. MLTs also operate both large and small analyzers or equipment. They are able to perform maintenance and take apart those analyzers. Some of the analyzers are the size of a toaster or just slightly larger than a cell phone. Other ones can fill an entire classroom, and often cost more than a house. MLTs identify bacteria, and figure out if the bacteria are normal or abnormal based on the body site from which it was collected. They also work in blood banking and find blood for patients who need transfusions. Hospital labs are very automated, but some manual tests are done there as well. The program at DMACC is designed to teach the theory of the lab tests. We do a lot of our procedures manually. The DMACC MLT lab does have some automation. Faculty also try very hard get students to tour labs around the area.

Slide 3. The DMACC MLT program starts in the Fall semester only. Our program is five (5) semesters total at the very least. This means it will take you at least five (5) semesters to complete the program regardless of previous coursework and/or degrees that you may have. There are two clinical rotations. One is a short phlebotomy rotation done early in the program. The second is the big clinical rotation in the final semester. MLT students have the option to complete the program full time or part time. Students may be unsuccessful in one MLT class, and may only restart the program or course one time. A Web-blended option is available for students who are time-bound or distance-bound. The Web-blended option works especially well for students who are already employed in hospitals in a lab support setting. Please be aware that you must have all of the "non MLT" science courses such as Anatomy and Physiology, Microbiology, and the Chemistry classes completed by Term 3, which summer semester. There is very limited time in the Summer to take additional courses.

Slide 4. The MLT classes in terms 1-4 are currently available to be taken on-site in a face-to-face classroom and lab setting or via a Web-blended option. In the Web-blended option, lecture material, quizzes, and proctored exams are delivered online. Labs are done at the hospital lab where a student is employed and on-campus at DMACC in Ankeny. Students with no lab experience may enroll in the Web-blended option if there is room in this section; however, it is not recommended, especially if they have no experience in a clinical laboratory and/or with patients. Ideally, for anyone starting the Web-blended program, it is recommended that they have completed all other "non-MLT" classes in the curriculum, such as all of the science courses, Composition, Speech, and Psychology and/or Sociology. Students in the Web-blended section of class meet for labs on Wednesdays. The amount of time varies depending on the semester, but students are generally in the lab for 4 to more than 8 hours those days.

Slide 5. There are two clinical rotations in the MLT program. The first one is early in the program, and students complete it either in the spring or summer of the first year. This is a 60-hour phlebotomy rotation. Students go to hospitals to draw blood, and rotation times may start as early as 4:00AM. The big rotation is in the final semester of the program, and it is where students spend 16 weeks rotating through the various areas of a hospital lab. Generally 1-4 students are placed at the same lab, so they are not there as a class. This is different from other health care programs where a teacher may be present with the entire class. In the MLT rotation, students are placed at various hospitals around the area, and work with certified lab techs. This rotation includes the week of spring break. Students are in the rotation full time, 40 hours per week during the day shift, which means they are typically starting at 6:00AM. During this final semester of the program, students also attend class at DMACC 3-4 times.

Slide 6. Job placement is excellent for graduates of this program. There is almost 100% job placement each year. I say almost 100% since some graduates choose not to take a job in a lab but rather return to school or do something else. The salary range is typically \$17-\$20 per hour in the Des Moines area, and actually higher in the smaller towns outside of central Iowa. Most entry level MLTs work on the evening or overnight shift, and also make shift differential, which is extra money for working after a certain time. Graduates must pass a national board exam in order to stay employed at most hospitals. Graduates of this program work mainly in hospitals but some also work in reference labs, blood centers, and clinics. Those graduates working in clinics may make less money than those that work in hospitals since many clinics are not high complexity testing labs.

Slide 7. This slide lists the key contact people for this program. Again, I am Karen Campbell, and I am the Program Chair. I teach mainly the 2nd-year students and also manage the rotations. Abbie Finnegan is the Program Advisor. She is a good resource, and can answer questions pertaining to the program entry requirements, financial aid, and other health care programs at DMACC. Jenn Ewalt works in the Admissions Department. She is the person who will receive your application and transcripts. She is the person who actually accepts you to the program once you complete the program entry requirements.

Slide 8. There are 7 program entry requirements and they are listed on the next slide. They include official transcripts from both high school or the equivalent, as well as any college courses that can transfer to this program.

Slide 9. The program entry requirements can be found at the website included at the top of this slide. It may be helpful to pull up this site and follow along, or a print out this web page and take notes on it. I'm sorry the writing on this slide is so tiny, but this is a list of the seven (7) program entry requirements for the MLT program. These include: completing an application and stating MLT as your major, attending or completing an information session which you are doing now, submitting proof of high school completion, and submitting proof of one full year of high school level algebra, biology, and chemistry with a grade of C or higher. Scores on standardized exams for reading, writing/English skills, and math are required. Item #8 on this list is not an entry requirement, but is listed here to make you aware that you may want to take an Anatomy and Physiology course before starting the program. There are limited sections of BIO164-Essentials of A&P, so the sooner you can take that course, the better, if you're planning to take this class.

Slide 10. These next few slides go over the courses in the MLT curriculum. This list can be found on the same website on which the program entry requirements are found. Courses and options for the first semester classes are listed on this slide and the next slide. I'll go over some of them now in more detail. MLT120 is the Urinalysis course. It is taught during the first 8 weeks of the fall semester. Students study urine (obviously), including the solid elements that are found in it, as well as bodily fluids such as synovial fluid which is found in joints and pleural fluid which is found in the lungs. MLT115 is the Clinical Lab Fundamentals course and it is taught the 2nd eight weeks of the first semester. In this class, students learn how to draw blood. They also begin using basic chemistry analyzers and techniques, performing basic hematology tests, and identifying normal blood cells.

Slide 11. This slide is a continuation of courses that students should consider taking during Term 1 of the program. An Anatomy and Physiology course is required. Options are listed here. Please work with an advisor or the MLT Program Chair to determine what option might be best for you. A general chemistry course is also required. Remember that all science courses should be completed before starting Term 3 if possible, so if you have not taken any of the classes in the program previously, you want to plan on taking at least two science courses with labs in both Terms 1 and 2, in addition to the MLT courses. Keep in mind that all MLT courses also have labs. If this is too much for you academically or will not work "time-wise" with your life due to work, family, etc., it is OK to stretch the program out to more than two years. Psychology or sociology is also required to earn an AAS degree.

Slide 12. In Term 2, the main MLT course is MLT 232-Advanced Hematology and Coagulation. In order to take this course, you must have passed the two MLT classes in the first semester with a grade of C or higher. In this course you will learn to identify cells that are associated with blood disorders like leukemia and sickle cell anemia. You also study coagulation problems, like hemophilia; and, how anti coagulants, sometimes mistakenly called blood thinners, affect a patient. Notice

that this is a 5-credit course, which means that it is a big class. Other classes to consider taking in Term 2 are Composition, a general Microbiology course, and an Organic Chemistry class.

Slide 13. Term 3 is the summer semester, and it is very busy. In order to take these classes you must have passed the MLT class in Term 2 with a grade of C or higher. Immunohematology is a fancy name for blood banking and it is 5 college credits. In this class, students practice blood typing, finding blood for patients needing transfusions, and working with prenatal and postpartum samples. Immunology and Serology is a shorter, 2-credit course. In this class, students learn dilutions, and how to perform some of the basic immunology tests done in the lab. Common ones include testing for mononucleosis, pregnancy, and Strep. Advanced immunology testing includes finding organs for people needed transplants. MLT180 is the first clinical rotation in the program. Students do have the option to take this course in the previous semester if they have many of the other courses in the curriculum done. Students with phlebotomy experience may test out of the clinical practicum by following the challenge test policy.

Slide 14. Term 4 is the second fall semester, and can be very busy, especially for students who take both courses at the same time. Clinical Chemistry is an 8-credit course, and covers about 600 lab tests, and how they relate to the body and various diseases and disorders. Clinical Microbiology is a 6-credit class, and covers hundreds of bacteria, viruses, fungi, and parasites. This is often the semester where students drop down to part time status if they plan to take an extra year to complete the program. A speech class is listed in this term, although students can take it almost anytime throughout the program.

Slide 15. The final semester of the program includes two classes that total 12 credits. The Advanced Clinical Lab Practicum class is the final clinical rotation. The rotation will go through spring break. The rotations are Monday through Friday, 8 hours each day, usually starting at 6:00AM. This rotation class, as well as the Professionalism and Review class are taken concurrently. Students are required to attend class on-campus 3-4 times during the semester.

Slide 16. In each MLT class, students are required to pass with a grade of "C" or higher. This means that students must pass both the lecture and lab sections of each MLT class with a score of 78%, which is the lowest grade of "C" in the MLT program, in order to move on to the next semester's MLT course(s). Students also must maintain an overall GPA of 2.0 to graduate from the MLT program.

Slide 17. Once students are accepted to the MLT program, they will complete an Orientation. At the Orientation, they will get or print an immunization form. The immunizations are due on the first day of class. A summary of the immunizations are found on this slide, and a more detailed listing is directly on the form. Students must show proof that they have been protected against chicken pox; Hepatitis B; diphtheria, tetanus, and pertussis; measles, mumps, and rubella; tuberculosis; and the flu. Before returning this form, a health care provider will need to sign it. That can be your doctor, the campus nurse or nurse practitioner, or someone from a county health center. You do not need to get re-immunized if you can find proof that these immunizations were given at some point in your life, and have not expired.

Slide 18. Background checks are required for all students before doing their first clinical rotation in a hospital. Please note that all convictions, even deferred judgment, will show up on your background check. The fee for this is not part of your tuition. Know that a hospital can refuse to accept you for your clinical rotation based on the results of your background check. If you cannot complete either clinical rotation, you will not be able to graduate from the MLT program.

Slide 19. Estimated costs for the program can be found on the program website. In general, the program is a minimum of 71 credit hours, so 71 multiplied by the tuition per credit hour is the cost of the program. There is also a materials and supplies fee that is included in tuition for most of the courses. You are able to see that in the course description, so it's not a surprise. Other costs during the program will include books, your physical and immunizations, the background check which is currently \$58, attending the state lab meeting in the final semester of the program, and then paying for your national board exam after you graduate

Slide 20. I have no doubt that for many of you, what you learn in the MLT classes will be brand new information. Here are some of the things to consider or expect in class. You will learn the skill of phlebotomy, which is drawing blood. So you will draw blood from classmates, and they will draw blood from you. This will happen in the Clinical Fundamentals class in

the first semester of the program. You will also handle blood and urine and other body fluids and specimens both in the student lab and in the real hospital lab. You need to be able to make your own decisions and work independently. Rarely will you have a lab partner, like you do in some classes. There is math in every single MLT class, and you will also use it during your rotation. This is a potentially challenging and hard academic program that is heavy in science and math. A lot of study time will be required.

Slide 21. During your two hospital rotations, these are some of the things that you can expect to do. You will draw blood, and you will see and interact with sick people. In general, MLTs do not have a lot of contact with patients, but the phlebotomy rotation allows you to see and understand exactly from where your samples come. Your rotation courses are actually in a hospital lab rather than a school lab. When you are in your rotations, you will have many different teachers sometimes multiple teachers each day or week. You will work with all types of body specimens. You will report real results to physicians. And you will have homework during your rotations.

Slide 22. I am adding this slide that deals with the potential impact of COVID-19. In the spring 2020 semester, most MLT students were displaced from their clinical sites during the final half of their final rotation. In order to graduate, they had to complete the rotation online. Simulation is generally not a realistic option in the lab. In order to complete the program, you must do the clinical rotations, and this means that hospitals must allow you to physically be present to draw blood and to work in the lab. In the classes before your rotation be aware that there may be some changes. There may be changes to the class meeting days on campus. We may also add some or more online instruction than normally is given. And instructors may have to include some virtual real-time lecture and laboratory activities rather than you being on campus for those.

Slide 23. If you have any questions about material presented here, please ask! Here is the list of the key contact people for the MLT program once again. Reach out to any of us with questions, and we will do our best to help you. Thank you.