

# Medical Technology

## Overview

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The medical laboratory technician (MLT) program at Folsom Lake College is designed to prepare students to qualify for and pass the National Medical Laboratory Technician Licensing exam. The Folsom Lake College MLT program is accredited by the [California Department of Public Health \(CDPH\)](https://www.cdph.ca.gov/) (<https://www.cdph.ca.gov/>), [Laboratory Field Services \(LFS\)](https://www.cdph.ca.gov/Programs/OSPHLD/LFS/Pages/Home.aspx) (<https://www.cdph.ca.gov/Programs/OSPHLD/LFS/Pages/Home.aspx>), and the [National Accrediting Agency for Clinical Laboratory Sciences \(NAACLS\)](https://naacls.org/) (<https://naacls.org/>). For more information, FAQ's and to apply, please visit our medical laboratory technician department website.

### MLT DEPARTMENT (/ACADEMICS/MEDICAL-TECHNOLOGY-AND-PRE-CLINICAL-LABORATORY-SCIENCE-DEPARTMENT)



The MLT program includes aspects of didactic and clinical training to prepare students to step into functioning medical laboratories, either in a hospital or research lab setting. The program has robust prerequisites and is intended to equip completers to execute any aspect of their profession both within and outside California. Not only will this approach prepare students for possible career advancement later, it will also result in the best possible preparation for a career as an MLT. For more detailed information related to the program, students should consult the current version of the [MLT Program Handbook \(/flc/main/doc/instruction/mlt/MLTProgramHandbook.pdf\)](/flc/main/doc/instruction/mlt/MLTProgramHandbook.pdf) (PDF).

Successful completion of the MLT program requirements and general education graduation requirements of Folsom Lake College qualify the student for an associate degree in Medical Technology. Program completers are eligible to sit for the national MLT licensing exam administered by the American Society for Clinical Pathology (ASCP). Once a passing score on the ASCP National exam is achieved, graduates can apply for both national certification and state licensure.

To be eligible for enrollment in the program or in individual MEDTEC courses, the student must meet the following criteria:

- Complete the [application process for enrollment \(/academics/medical-technology-and-pre-clinical-laboratory-science-department/apply-to-the-mlt-program\)](/academics/medical-technology-and-pre-clinical-laboratory-science-department/apply-to-the-mlt-program) in the MLT program.
- Fulfill all requirements set by the program and its clinical affiliates including, but not limited to: background clearance, physical examination, immunization clearance, and drug screening.
- All students must have completed all program prerequisites with a grade of C or better and have a minimum grade point average in those prerequisite courses of 2.50.

The program is designed to prepare the student for licensure, for employment, and to participate as a member of a health care team. As part of the program, students will be placed in an operating medical laboratory as an intern in their final semester of program residence. Completers of the program will have demonstrated consistently professional, safe, and ethical practice.

Students admitted to the program are responsible for providing a lab coat, laboratory fees (as applicable), liability insurance (available through the college to program participants), minor necessary equipment, and transportation to off-campus locations. All costs/fees are subject to change.



## Career Options

The medical laboratory technology training program prepares students for employment in clinical laboratories, industry, and biotechnology as a medical laboratory technician, laboratory assistant, and/or research technician/associate.

The role of the medical laboratory technician is to perform routine laboratory analyses that are involved in the detection, diagnosis, and treatment of diseases. Program completers that successfully pass the American Society for Clinical Pathology (ASCP) national certification exam and receive state licensure will be eligible to work in hospitals and research laboratories in California. It should be noted that passing the ASCP national certification exam meets a requirement for state licensure, but does not itself grant state licensure. Only the State of California can grant state MLT licensure, which must be obtained in order to work as an MLT in the state. Likewise, should a graduate wish to receive MLT licensure outside of California, they will be required to fulfill the requirements set by the state they wish to receive licensure in.

Skills and techniques learned as part of the MLT program may also make program completers eligible for employment at other laboratory facilities that may or may not require state or federal licensure.

## Highlights

- Designed to prepare students to qualify for and pass the national medical laboratory technician certification exam.
- Cohort training program that requires application for admission (see admission requirements on the [MLT website \(/academics/medical-technology-and-pre-clinical-laboratory-science-department\)](#))
- Training in state-of-the-art hospital laboratory techniques
- Clinical practicums at a hospital facility are included as part of the program
- Accredited by the California Department of Public Health (CDPH), Laboratory Field Service (LFS), and National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)

## Program Maps

[Public Service, Health, and Education Undecided Major \(/flc/main/doc/instruction/program-maps/Public-service-undecided-major.pdf\)](#)

[Medical Technology, Medical Laboratory Technician, A.S. Degree \(/flc/main/doc/instruction/program-maps/Med-Lab-Tech-AS.pdf\)](#)

[Medical Technology, Pre-Clinical Laboratory Scientist Trainee, Certificate of Achievement \(/flc/main/doc/instruction/program-maps/Pre-Clinical-Laboratory-Scientist-Trainee-Certificate.pdf\)](#)

Dean [Vicky Maryatt \(/about-us/contact-us/faculty-and-staff-directory/vicky-maryatt\)](#)

Department Chair [Jason Pedro \(/about-us/contact-us/faculty-and-staff-directory/jason-pedro\)](#)

Meta-Major [Public Service, Health, and Education \(/academics/meta-majors/public-service-health-and-education\)](#)

Division [Medical Technology Department \(/academics/medical-technology-and-pre-clinical-laboratory-science-department\)](#)

Phone (916) 608-6927

Email [careerprograms@flc.losrios.edu \(mailto:careerprograms@flc.losrios.edu\)](mailto:careerprograms@flc.losrios.edu)

## Associate Degree

### A.S. in Medical Laboratory Technician

The Medical Laboratory Technician Program and Degree aim to produce highly-trained individuals who successfully pass the Medical Laboratory Technician national licensing exam and who will remain committed to all ethical and affective objectives in a healthcare setting, while exhibiting the critical core values of accountability, dedication, work ethic, and trust. The Program includes didactic, laboratory, and practicum components that are structured to facilitate the achievement of educational and career goals. The Medical Laboratory Technology Program prepares students for employment in clinical laboratories, industry, and biotechnology as a Medical Laboratory Technician, Laboratory Assistant and/or Research Technician. The required curriculum integrates basic concepts, technical procedures, and laboratory exercises prior to the required practical experience. Practicum courses are held at an affiliate site where students receive hands-on workplace experience in the job duties of a Medical Laboratory Technician. The Program is designed for students to master the competencies, skills, and knowledge required in this profession. This curriculum prepares individuals to perform clinical laboratory procedures in chemistry, urinalysis, phlebotomy, hematology, coagulation, microbiology, immunohematology, and immunology. These procedures may be used in the maintenance of health and diagnosis/treatment of disease. Course work emphasizes mathematical and scientific concepts related to specimen collection, laboratory testing and procedures, quality assurance and reporting/recording and interpreting findings involving tissues, blood, and body fluids. The Program recognizes the importance of professional standards and ethical obligations critical to health care professions. Development of professional competence, personal growth and effective patient care are integrated into each part of the curriculum. Purchase of personal protective equipment and minor class supplies including, but not limited to: safety glasses, disposable gloves, and glass slides, is required. Access to a computer and printer is also required. Students will also be required to purchase their portion of the college's liability insurance and submit to a background screening. Students must also provide documentation of immunizations and/or titers for several diseases including but not limited to Measles-Mumps-Rubella (MMR), Varicella Zoster, Tetanus-Diphtheria-Pertussis (Tdap), Hepatitis B, and Influenza, as blood and body fluid specimens will be obtained and processed. Students must also demonstrate a negative Tuberculosis status and provide documentation of health insurance. A full cost breakdown can be found at <http://www.flc.losrios.edu/academics/medical-laboratory-technician>.

Catalog Date: June 1, 2020

### Degree Requirements

COURSE CODE	COURSE TITLE	UNITS
MEDTEC 310	Introduction to Medical Laboratory Techniques and Skin Punctures	2
MEDTEC 323	Clinical Chemistry	4
MEDTEC 324	Urine and Body Fluid Analysis	2
MEDTEC 330	Hematology	4
MEDTEC 340	Immunology and Immunohematology	4
MEDTEC 350	Clinical Microbiology	4
MEDTEC 360	Chemistry and Urinalysis Practicum	4
MEDTEC 361	Hematology and Hemostasis Practicum	4
MEDTEC 362	Immunology and Immunohematology Practicum	4

COURSE CODE	COURSE TITLE	UNITS
MEDTEC 363	Microbiology Practicum	4
<b>A minimum of 0 units from the following:</b>		0 <sup>1</sup>
MEDTEC 311	Advanced Phlebotomy Venipuncture Skills (2)	
MEDTEC 312	Phlebotomy Clinical Internship (2)	
<b>Total Units:</b>		<b>36</b>

<sup>1</sup>Students that hold a valid and current California Phlebotomist certificate (CPT-1) are not required to take MEDTEC 311 or MEDTEC 312 while participating in the Medical Laboratory Technician Program. Per the State of California, students without a valid and current CPT-1 certificate are required to take MEDTEC 311 and MEDTEC 312 as part of their Medical Laboratory Technician training.

*The Medical Laboratory Technician Associate in Science (A.S.) degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See FLC graduation requirements.*

## Enrollment Eligibility

To be eligible for enrollment in the program, the student must meet the following criteria:

- Complete the application process for enrollment in the MLT program.
- Acceptance into the MLT program and completion of all of the following eligibility criteria with a grade of "C" or better. All Program prerequisites must be completed before the start of the first MLT class.
- CHEM 400 - General Chemistry I, or CHEM 420 - Organic Chemistry I
- CHEM 401 - General Chemistry II, or CHEM 421 - Organic Chemistry II
- BIOL 400 - Principles of Biology, or BIOL440 -General Microbiology
- STAT 300 - Introduction to Probability and Statistics, or PSYC 330 -Introductory Statistics for the Behavioral Sciences
- COMM 321 - Interpersonal Communication (preferred), or COMM 301 - Introduction to Public Speaking, or COMM 311 - Argumentation and Debate, or COMM 331 - Group Discussion, or COMM 361 - The Communication Experience
- AH 110 - Medical Language for Health-Care Providers, or licensure/certification in a medically-related field (e.g. Phlebotomist, Radiology Technician, Respiratory Therapist, Pharmacy Technician, Nurse), or graduation from an Allied Health Program or Degree; subject to approval by the MLT Program Director.
- Students may take General Education requirements concurrently with prerequisite courses and during the didactic portion of the MLT Program. During the practicum portion of the MLT Program students are required to intern at their clinical site for 40 hours per week. As such, enrolling in additional courses can only occur outside of these assigned hours. The above also applies to students who are employed and work hours outside of the MLT Program. No exceptions will be made, which result in missed MLT Program hours, for students who need to commit hours to their employer or any other outside entity.
- In order to qualify to sit for the national licensing exam and acquire California MLT licensure, students must complete 60 semester units, 36 of which must be in physical or biological sciences. While the MLT program and its prerequisite courses typically meet this requirement for most students, it is ultimately the student's responsibility to ensure they have the appropriate semester units for MLT licensure.
- It is the student's responsibility to ensure they have met all state and national licensure requirements including but not limited to: possession of a valid social security number, appropriate semester units, and post-graduation licensure fees. More information can be found at [https://www.cdph.ca.gov/programs/lfs/Pages/MedicalLaboratoryTechnician\(MLT\).aspx](https://www.cdph.ca.gov/programs/lfs/Pages/MedicalLaboratoryTechnician(MLT).aspx) and <http://www.ascp.org/certification>.
- Students need not hold a certificate in phlebotomy to apply to the MLT program at FLC. Those who do not already have a phlebotomy certificate will be trained in phlebotomy per the standards set forth in the California Administration Code Title 17 1035.3. Students already in possession of a valid phlebotomy certificate need not enroll in the phlebotomy courses, MEDTEC 311 and 312.

## Enrollment Process

Eligible students are selected for the program according to the following steps:

- Applications to the program may be obtained online at: <http://www.flc.losrios.edu/academics/medical-laboratory-technician>
- Only students who meet the pre-enrollment requirements and follow the pre-enrollment procedures, including a pre-application meeting with Counseling Services, will be considered for the MLT Program. Meeting all these requirements does not guarantee acceptance into the program.
- Selection is based on a computerized random selection process from a qualified applicant pool.
- The students accepted into the MLT Program must fulfill all requirements set forth by the MLT Student Guidelines including but not limited to: background clearance, physical examination, immunization clearance, and drug screening. The student is responsible for any cost incurred related to meeting the requirements.
- Students who are not accepted into the MLT Program must reapply to the program at its next offering. There is no waitlist for the MLT Program.

## Student Learning Outcomes

Upon completion of this program, the student will be able to:

- pass the nationally recognized certification examination.
- apply appropriate quality control procedures and recognize and interpret erroneous results for any applicable medium-complexity laboratory testing process.
- describe the principles, the clinical significance, and critical values of applicable medium-complexity clinical laboratory test results.
- demonstrate safe use and disposal of biohazardous materials, and the proper methods of specimen preparation.
- assess sample quality and cite any pre-analytical variables in testing.
- demonstrate successful venipunctures and skin punctures on patients from a variety of age groups with a variety of medical conditions.
- exhibit professional and committed delivery of excellent health care.

## Career Information

The Medical Laboratory Technician is an entry-level position in the healthcare industry with a current (2016) approximate starting wage range of \$28.00-\$36.00 hourly. The role of the Medical Laboratory

Technician is to perform routine laboratory analyses that are involved in the detection, diagnosis, and treatment of diseases. With increasing reliance on computer technology, the role of the medical laboratory technician has become less hands-on and more analytical. The Medical Laboratory Technician will be an entry-level position for the healthcare industry and/or a transfer opportunity to schools offering a B.S. in Medical Technology.

## Certificate of Achievement

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### Pre-Clinical Laboratory Scientist Trainee Certificate

The Pre-Clinical Laboratory Scientist Trainee certificate aims to guide individuals who are hoping to become a licensed Clinical Laboratory Scientist (CLS) in the State of California. As part of this process, individuals must obtain a CLS Trainee license from the California Department of Public Health Department of Laboratory Field Services (CDPH-LFS) before enrolling in a CLS Program. The CLS Trainee license has several prerequisite courses that this certificate, and its prerequisite courses, aim to satisfy. To be clear, the Pre-Clinical Laboratory Scientist Trainee certificate is not a CLS program, nor does it allow graduates to work in the clinical laboratory upon graduation. Instead, this certificate provides a clear path for individuals interested in pursuing entry into a CLS program. The Pre-Clinical Laboratory Scientist Trainee certificate does not grant entry into any CLS Program. Students interested in CLS must apply to CLS programs separately and comply with each program's individual requirements. Furthermore, in order to receive a CLS Trainee License from the State of California, students are required to submit an application to the California Department of Public Health. More information on this process can be on the MLT Department webpage: <https://www.flc.losrios.edu/academics/medical-technology-department>. The required didactic curriculum prepares individuals to perform basic clinical laboratory procedures in chemistry, hematology, microbiology, immunohematology, and immunology. Course work emphasizes mathematical and scientific concepts related to specimen collection, laboratory testing and procedures, quality assurance and reporting/recording and interpreting findings involving tissues, blood, and body fluids. Purchase of personal protective equipment and minor class supplies including, but not limited to: safety glasses, disposable gloves, and glass slides, is required. Access to a computer and printer is also required. Students are further advised to ensure all their immunizations are current as blood and body fluids are utilized. Immunizations include, but are not limited to: Hepatitis B, Measles-Mumps-Rubella (MMR), Varicella Zoster, Tetanus-Diphtheria-Pertussis (Tdap), and Influenza.

**Catalog Date:** June 1, 2020

### Certificate Requirements

COURSE CODE	COURSE TITLE	UNITS
MEDTEC 323	Clinical Chemistry	4
MEDTEC 324	Urine and Body Fluid Analysis	2
MEDTEC 330	Hematology	4
MEDTEC 340	Immunology and Immunohematology	4
MEDTEC 350	Clinical Microbiology	4
<b>Total Units:</b>		<b>18</b>

### Student Learning Outcomes

Upon completion of this program, the student will be able to:

- apply appropriate quality control procedures and recognize and interpret erroneous results in the laboratory testing process.
- describe the principles, the clinical significance, and critical values of clinical laboratory test results.
- demonstrate safe use and disposal of biohazardous materials, and the proper methods of specimen preparation.

## Medical Technology (MEDTEC) Courses

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### MEDTEC 310 Introduction to Medical Laboratory Techniques and Skin Punctures

<b>Units:</b>	2
<b>Hours:</b>	27 hours LEC; 27 hours LAB
<b>Prerequisite:</b>	None.
<b>Enrollment Limitation:</b>	Students must be admitted to the Medical Laboratory Technician Program at Folsom Lake College. Students must also provide documentation of Hepatitis B vaccination status before beginning this class, as students will be handling blood and body fluid specimens in all class sessions. Students will also be required to purchase their portion of the college's liability insurance policy.
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course prepares students for a career in a medical laboratory. It fulfills the minimum requirement of 20 hours of didactic instruction in Basic Phlebotomy instruction as required by California Department of Public Health for a Medical Laboratory Technician. Students perform skin punctures, which is the penetration of the skin with a lancet to withdraw blood, on other students. Students learn about the ten most common laboratory tests, as well as the appropriate patient instructions for these specimen collections. Purchase of personal protective equipment, including a lab coat, safety glasses, and disposable gloves, is required. Students may be required to provide their own transportation on a field trip.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- discuss the major points of the Patient's Bill of Rights and the Health Insurance Portability Accountability Act (HIPAA) and the phlebotomist's responsibility for maintaining confidentiality of privileged information on individuals.
- enumerate the different sections of a medical laboratory and the common tests and specimen requirements for each section.
- choose the correct blood collection equipment for a variety of both skin and vein punctures, including the types of tubes and additives.
- differentiate between capillary and venous specimens, state the acceptable order of draw for capillary specimens, and name the tests that cannot be performed on capillary specimens.
- demonstrate at least five skin puncture procedures on a variety of students with the correct documentation of patient and specimen identification and employ appropriate Standard Precautions and

## MEDTEC 311 Advanced Phlebotomy Venipuncture Skills

<b>Units:</b>	2
<b>Hours:</b>	27 hours LEC; 27 hours LAB
<b>Prerequisite:</b>	MEDTEC 310 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Students must be admitted to the Medical Laboratory Technician Program at Folsom Lake College. Students must also provide documentation of Hepatitis B vaccination status before beginning this class, as students will be handling blood and body fluid specimens in all class sessions. Students are also required to purchase their portion of the college's liability insurance policy.
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course meets the minimum requirement of 20 hours of didactic instruction in Advanced Phlebotomy procedures as required by the California Department of Public Health (CDPH) regulations. Students learn to perform a venipuncture (the penetration of a vein with a needle to withdraw blood for therapeutic or clinical laboratory testing) on other students using the three available systems. Purchase of personal protective equipment, including a lab coat, safety glasses, and disposable gloves is required. Students may be required to provide their own transportation on a field trip.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- differentiate the various arm veins and the suitability of each for venipuncture.
- describe the risk factors, list the complications, and evaluate the appropriate phlebotomist responses associated with venipuncture complications for a variety of patient age groups.
- list the pre-analytical sources of error in specimen collection, transport, processing and storage, and demonstrate correct procedures used to prevent such errors.
- demonstrate at least 6 successful venipunctures on a variety of students using the 3 different methods and following appropriate safety and infection control procedures.

## MEDTEC 312 Phlebotomy Clinical Internship

<b>Units:</b>	2
<b>Hours:</b>	9 hours LEC; 81 hours LAB
<b>Prerequisite:</b>	MEDTEC 311 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Students must be admitted to the Medical Laboratory Technician Program and have met all requirements for entry including, but not limited to: passing all drug, background, and immunology screening requirements, paying their portion of the college's liability insurance policy, and obtaining personal health insurance.
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course provides a clinical laboratory experience in the phlebotomy department of a health care organization. The clinical internship is conducted as a non-paid laboratory experience and the student is required to attend the facility for the minimum required hours. Students will perform at least 50 venipuncture procedures on patients from a variety of age groups and medical conditions. Emphasis will be placed on safety, specimen quality, and proper venipuncture technique. Purchase of personal protective equipment, including a lab coat, safety glasses, and disposable gloves, is required. Students will also be required to provide their own transportation to the partner health care facility which may be outside of the Sacramento region.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- employ appropriate specimen processing and handling procedures, describe criteria for rejection, and recognize tests needing special handling or confirmatory testing.
- apply departmental safety procedures, including the safe use and disposal of biohazardous material.
- demonstrate correct techniques when performing a minimum of 50 venipunctures on patients from a variety of age groups and medical conditions, using appropriate infection control and safety precautions.
- practice the correct administrative skills of a phlebotomist such as answering phones, specimen labeling, test ordering, accessioning, and specimen processing.

## MEDTEC 323 Clinical Chemistry

<b>Units:</b>	4
<b>Hours:</b>	50 hours LEC; 66 hours LAB
<b>Prerequisite:</b>	CHEM 401 or 421 with a grade of "C" or better
<b>Advisory:</b>	PSYC 330 or STAT 300 with a grade of "C" or better
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course introduces students to mathematical applications in the clinical laboratory, especially as applied to quality assurance, quality control and reporting of results. Also covered is the basic biochemistry of metabolism, including carbohydrates, proteins, lipids and electrolytes, and the instrumentation used for their measurement. The study of endocrinology, enzyme function, therapeutic drugs, and blood gases will also be covered. Discussion topics will be correlated with applications in human medicine. Purchase of personal protective equipment, including safety glasses and disposable gloves, is required. Students are further advised to ensure all their immunizations are current as blood and body fluids are utilized. Immunizations include, but are not limited to: Hepatitis B, Measles-Mumps-Rubella (MMR), Varicella Zoster, Tetanus-Diphtheria-Pertussis (Tdap), and Influenza.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- explain pre-analytic, analytic, and post-analytic variables in sample testing.

- cite the various analytes in the body and how they correlate with specific disease states.
- describe the analytic methods behind basic chemistry instrumentation including the mechanism of measurement and any system limitations.
- evaluate quality control results and recognize trends, shifts and invalid results.
- demonstrate proper dilution technique through the utilization of various laboratory pipettes.
- analyze a calibration curve to identify the concentration of an unknown substance.

## MEDTEC 324 Urine and Body Fluid Analysis

<b>Units:</b>	2
<b>Hours:</b>	20 hours LEC; 48 hours LAB
<b>Prerequisite:</b>	BIOL 400 or 440 with a grade of "C" or better
<b>Advisory:</b>	MEDTEC 323
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

An introduction to the study of urine and body fluid analysis. Includes the anatomy and physiology of the kidney, physical, chemical and microscopic examination of urine, cerebrospinal fluid, and other body fluids as well as quality control, quality assurance and safety. Also covered is the metabolism resulting in these body fluids and the associated abnormalities and their applications in human medicine. Purchase of personal protective equipment, including safety glasses and disposable gloves, is required. Students are further advised to ensure all their immunizations are current as blood and body fluids are utilized. Immunizations include, but are not limited to: Hepatitis B, Measles-Mumps-Rubella (MMR), Varicella Zoster, Tetanus-Diphtheria-Pertussis (Tdap), and Influenza.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- exhibit an understanding of the anatomy and function of the renal system.
- correlate urinalysis and body fluid test results with patient condition(s).
- perform a routine urinalysis and explain the principles of each test.
- describe the composition, formation, and function of urine and selected body fluids.
- state the collection procedure for urine and other selected body fluids.

## MEDTEC 330 Hematology

<b>Units:</b>	4
<b>Hours:</b>	50 hours LEC; 66 hours LAB
<b>Prerequisite:</b>	BIOL 400 or 440 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Admission to the Medical Laboratory Technician (MLT) Program or program director approval
<b>Advisory:</b>	CHEM 401 or 421 with a grade of "C" or better
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course provides an overview of human blood cell development and function. Hematological disorders and corresponding laboratory findings will also be addressed. Purchase of personal protective equipment, including safety glasses and disposable gloves, is required. Students are further advised to ensure all their immunizations are current as blood and body fluids are utilized. Immunizations include, but are not limited to: Hepatitis B, Measles-Mumps-Rubella (MMR), Varicella Zoster, Tetanus-Diphtheria-Pertussis (Tdap), and Influenza.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate an understanding of the components of human blood including cellular characteristics, functions, abnormalities, and disease states.
- describe the coagulation mechanism and correlate abnormalities with disease states.
- demonstrate proficiency in the skills necessary to perform blood cell counts, and evaluation of blood elements within stated limits of accuracy.
- perform the slide stain procedure and demonstrate competency in blood cell differentiation.
- demonstrate compliance with OSHA safety regulations for blood-borne pathogens.

## MEDTEC 340 Immunology and Immunochemistry

<b>Units:</b>	4
<b>Hours:</b>	50 hours LEC; 66 hours LAB
<b>Prerequisite:</b>	CHEM 401 or 421 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Admission to the Medical Laboratory Technician (MLT) Program or program director approval
<b>Advisory:</b>	MEDTEC 330 with a grade of "C" or better
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course introduces the principles of the immune response, including cells and function of the immune system as well as antibody and antigen reactions. Blood grouping, compatibility testing, transfusion medicine, immunological and serological testing procedures are also discussed. Purchase of personal protective equipment, including safety glasses and disposable gloves, is required. Students are further advised to ensure all their immunizations are current as blood and body fluids are utilized. Immunizations include, but are not limited to: Hepatitis B, Measles-Mumps-Rubella (MMR), Varicella Zoster, Tetanus-Diphtheria-Pertussis (Tdap), and Influenza.

## Student Learning Outcomes

Upon completion of this course, the student will be able to:

- recognize components of the immune system and their protective action as applied to injury or disease.
- correlate the various serologic markers of hepatitis with their diagnostic significance and indicate the laboratory methods that are most commonly used to screen, confirm, or monitor hepatitis virus infections.
- describe the characteristics of ABO, Rh, and other blood group systems, and identify their role in blood compatibility.
- demonstrate an understanding of intermediate level Immunohematology testing including the resolution of forward and back-type mismatching, antibody panel interpretation, and proper transfusion reaction workup.
- perform serological testing methods and define their principles and limitations.
- apply forward and back-typing procedures to correctly identify the blood type of an unknown sample.

## MEDTEC 350 Clinical Microbiology

<b>Units:</b>	4
<b>Hours:</b>	50 hours LEC; 66 hours LAB
<b>Prerequisite:</b>	BIOL 400 or 440 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Admission to the Medical Laboratory Technician (MLT) Program or program director approval
<b>Advisory:</b>	CHEM 401 or 421
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course discusses pathogenic bacteria, fungi and parasites. Emphasis is placed on morphology and identification of medically important organisms and techniques used in their identification. Purchase of personal protective equipment and minor class supplies including, but not limited to: safety glasses, disposable gloves, and glass slides, is required. Students are further advised to ensure all their immunizations are current as blood and body fluids are utilized. Immunizations include, but are not limited to: Hepatitis B, Measles-Mumps-Rubella (MMR), Varicella Zoster, Tetanus-Diphtheria-Pertussis (Tdap), and Influenza.

## Student Learning Outcomes

Upon completion of this course, the student will be able to:

- discriminate between normal and abnormal flora for all areas of the body.
- evaluate specimen acceptability and apply proper methods of specimen preparation.
- evaluate the impact of various infectious diseases, including descriptions of the causative agent(s), signs and symptoms, pathogenesis, virulence factors, epidemiology, diagnosis, biochemical testing, treatment, and prevention.
- demonstrate safe use, handling, and disposal of microbiological organisms and bio-hazardous waste.
- apply Gram Stain and biochemical testing procedures to identify an unknown organism.

## MEDTEC 360 Chemistry and Urinalysis Practicum

<b>Units:</b>	4
<b>Hours:</b>	216 hours LAB
<b>Prerequisite:</b>	MEDTEC 323 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Students must be admitted to the Medical Laboratory Technician Program and have met all requirements for entry including, but not limited to: passing all drug, background, and immunology screening requirements, paying their portion of the college's liability insurance policy, and obtaining personal health insurance.
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course provides a clinical laboratory experience in the chemistry department of a health care organization. Instrumentation and manual methods will be introduced. The clinical internship is conducted as a non-paid laboratory experience and the student is required to attend the facility for the minimum required hours. Emphasis will be placed on technique, accuracy and precision as well as quality control, bio-marker significance, and urinalysis procedures. Purchase of personal protective equipment, including a lab coat, safety glasses, and disposable gloves, is required. Students will also be required to provide their own transportation to the partner health care facility which may be outside of the Sacramento region.

## Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate an understanding of chemistry and urinalysis test results and understand their clinical significance.
- apply departmental safety procedures, including the safe use and disposal of biohazardous material.
- demonstrate familiarity with basic department specific maintenance procedures and apply quality control and corrective action procedures as appropriate.
- perform specimen analysis as appropriate, correctly interpreting chemistry and urinalysis results.
- employ appropriate specimen processing and handling procedures, describe criteria for rejection, and recognize tests needing special handling or confirmatory testing.
- perform both macroscopic and microscopic urinalysis procedures including the identification and differentiation of urine elements.

## MEDTEC 361 Hematology and Hemostasis Practicum

<b>Units:</b>	4
<b>Hours:</b>	216 hours LAB

<b>Prerequisite:</b>	MEDTEC 330 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Students must be admitted to the Medical Laboratory Technician Program and have met all requirements for entry including, but not limited to: passing all drug, background, and immunology screening requirements, paying their portion of the college's liability insurance policy, and obtaining personal health insurance.
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course provides a clinical laboratory experience in the hematology department of a health care organization. Instrumentation and manual methods will be introduced. The clinical internship is conducted as a non-paid laboratory experience and the student is required to attend the facility for the minimum required hours. Emphasis will be placed on technique, accuracy and precision as well as blood cell differentiation, blood cell indices, and coagulation procedures. Purchase of personal protective equipment, including a lab coat, safety glasses, and disposable gloves, is required. Students will also be required to provide their own transportation to the partner health care facility which may be outside of the Sacramento region.

## Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate an understanding of hematology test results and their clinical significance.
- apply departmental safety procedures, including the safe use and disposal of biohazardous material.
- demonstrate familiarity with basic department specific maintenance procedures and apply quality control and corrective action procedures as appropriate.
- perform specimen analysis as appropriate, correctly interpreting automated CBC and coagulation results.
- employ appropriate specimen processing and handling procedures, describe criteria for rejection, and recognize tests needing special handling or confirmatory testing.
- produce acceptable peripheral blood smear slides and correctly identify cellular components.

## MEDTEC 362 Immunology and Immunochemistry Practicum

<b>Units:</b>	4
<b>Hours:</b>	216 hours LAB
<b>Prerequisite:</b>	MEDTEC 340 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Students must be admitted to the Medical Laboratory Technician Program and have met all requirements for entry including, but not limited to: passing all drug, background, and immunology screening requirements, paying their portion of the college's liability insurance policy, and obtaining personal health insurance.
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course provides a clinical laboratory experience in the immunology/immunochemistry department of a health care organization. Instrumentation and manual methods will be introduced. The clinical internship is conducted as a non-paid laboratory experience and the student is required to attend the facility for the minimum required hours. Emphasis will be placed on technique, accuracy and precision as well as specimen receipt and evaluation, special handling procedures, and component processing in the transfusion service. Purchase of personal protective equipment, including a lab coat, safety glasses, and disposable gloves, is required. Students will also be required to provide their own transportation to the partner health care facility which may be outside of the Sacramento region.

## Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate an understanding of immunology and immunochemistry test results and their clinical significance.
- apply departmental safety procedures, including the safe use and disposal of biohazardous material.
- demonstrate familiarity with basic department specific maintenance procedures and apply quality control and corrective action procedures as appropriate.
- perform specimen analysis as appropriate, correctly interpreting serology and blood Bank results.
- demonstrate familiarity in the immunochemistry department by correctly interpreting blood type and antibody identification.
- employ appropriate specimen processing and handling procedures, describe criteria for rejection, and recognize tests needing special handling or confirmatory testing.
- execute proper blood product handling and dispensing procedures.

## MEDTEC 363 Microbiology Practicum

<b>Units:</b>	4
<b>Hours:</b>	216 hours LAB
<b>Prerequisite:</b>	MEDTEC 350 with a grade of "C" or better
<b>Enrollment Limitation:</b>	Students must be admitted to the Medical Laboratory Technician Program and have met all requirements for entry including, but not limited to: passing all drug, background, and immunology screening requirements, paying their portion of the college's liability insurance policy, and obtaining personal health insurance.
<b>Transferable:</b>	CSU
<b>Catalog Date:</b>	June 1, 2020

This course provides a clinical laboratory experience in the Microbiology department of a health care organization. Instrumentation and manual methods will be introduced. The clinical internship is conducted as a non-paid laboratory experience and the student is required to attend the facility for the minimum required hours. Emphasis will be placed on technique, accuracy and precision as well as specimen evaluation, organism identification, and susceptibility testing. Purchase of personal protective equipment, including a lab coat, safety glasses, and disposable gloves, is required. Students will also be required to provide their own transportation to the partner health care facility which may be outside of the Sacramento region.

## Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate an understanding of microbiology test results and their clinical significance.
- apply departmental safety procedures, including the safe use and disposal of biohazardous material.
- demonstrate familiarity with basic department specific maintenance procedures and apply quality control and corrective action procedures as appropriate.



- employ appropriate specimen processing and handling procedures, describe criteria for rejection, and recognize tests needing special handling or confirmatory testing.
- perform specimen analysis as appropriate, correctly interpreting culture results.
- demonstrate familiarity with the isolation and identification of pathogenic organisms in various specimen types.

## MEDTEC 495 Independent Studies in Medical Technology

**Units:** 1 - 3  
**Hours:** 54 - 162 hours LAB  
**Prerequisite:** None.  
**Catalog Date:** June 1, 2020

To be written at the time this course is applied.

## MEDTEC 499 Experimental Offering in Medical Technology

**Units:** 0.5 - 4  
**Prerequisite:** None.  
**Catalog Date:** June 1, 2020

To be written when this course is to be offered.

## Faculty

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