

Casper College

Medical Laboratory Technician Program

Student Handbook  
Fall 2018

## Table of Contents

Item	Page number
Introduction.....	3
Casper College Mission, Vision, Values and Goals.....	4
Casper College General Education Outcomes.....	5
Medical Laboratory Technician Program Mission Statement.....	6
Description of Clinical Laboratory Science Profession.....	6
Career Options.....	7
Career Laddering.....	7
MLT Program Goals.....	8
Description of MLT Entry Level Competencies.....	9
MLT Program Curriculum Standards.....	9
Admissions/Eligibility.....	9
Essential Functions.....	10
Length of Program.....	12
Financial Aid.....	12
Academic Advising/Counseling.....	12
Tutorial Help.....	13
Attendance Policy.....	13
Requirements for Graduation.....	14
Program Completion Awards.....	14
Student Behavior-Grounds for dismissal.....	14
Readmission Policy.....	16
MLT Code of Ethics.....	16
Description of the MLT Program.....	17
MLT Program Faculty.....	17
Academic Plan with Career Vocational Training.....	17
MLT Program Study Plan.....	18
Description of Clinical Experience.....	19
List of Clinical Affiliates.....	20
Service Work.....	20
MLT Program Course Descriptions/Objectives.....	21
Sample BS Articulation Plan.....	32
Projected Demand for MLT Graduates in the State and Region.....	34
Assessing Student Learning, Progression and Program Completion.....	34
Grading Policies.....	34
Certification Eligibility and Examination.....	35
Program Evaluation.....	36
Program Accreditation Process.....	36
Professional Societies.....	36
Licensure.....	37
MLT Professional Pledge.....	38
Handbook/Essential Functions Signature Sheet.....	39

## INTRODUCTION

Welcome to Casper College Medical Laboratory Technology department and clinical training programs. Casper College is dedicated to helping you become the best allied health professional possible. You have chosen an exciting profession which demands a commitment to caring, quality, accuracy, reliability, and responsibility. This Student Handbook has been prepared to provide essential information you will need for academic and clinical practice. This is a tool to help you reach your goals during the months ahead.

The regulations in this handbook are not intended to be discriminatory to anyone. The policies, regulations and procedures are those which are now in effect and may be changed at any time to reflect current board policies, administrative regulations and procedures, and amendments by state law.

**IT IS THE STUDENT'S RESPONSIBILITY TO BECOME THOROUGHLY FAMILIAR WITH PROGRAM POLICIES AS WELL AS THE SCHOOL OF HEALTH SCIENCES, COLLEGE AND CLINICAL INSTITUTION POLICIES. A COPY OF THE COLLEGE POLICIES IS AVAILABLE IN THE CATALOG AND CASPER COLLEGE STUDENT HANDBOOK.**

### **Student expectations:**

Students will be required to purchase the specific Chromebook model from the CC bookstore, as the Chromebooks are custom tailored for the MLTK program. Chromebooks **REQUIRE** internet access. As a student in the hybrid online MLTK program, it is the student's responsibility to ensure they have internet access. The Chromebooks have WiFi connectivity and a fiber optic data port.

The Chromebook is the responsibility of the student. Every student will be responsible for the care and security of their Chromebook. The Chromebook is to be utilized to complete all didactic and clinical work utilizing, Moodle, Google docs, Google slides, Google drive, etc.

Students will be given a demonstration on how to properly utilize their Chromebooks during orientation.

### The Mission of Casper College

With a mission of student success, Casper College provides educational opportunities to improve quality of life and sustainable community building and citizenship. The college is a premier public comprehensive two-year institution that provides academic transfer, vocational, continuing education and basic skills education for the citizens of Casper, Natrona County, the State of Wyoming and the World.

### The Vision of Casper College- Education for a Lifetime

The Values of Casper College- In pursuing our Vision and in support of our Mission, Casper College holds the following as the core values guiding our activities:

- Promote personal, professional and academic growth of the entire college community
- Provide open access and affordability
- Enhance a culture of trust, respect, and open communication among all participants
- Encourage diversity of thought, culture and experience
- Plan for the future in a context that reflects flexibility, innovation, tradition and sustainability
- Provide service to community
- Embrace accountability and responsibility
- Foster and maintain an enriching campus environment
- Celebrate and reward excellence

The Goal of Casper College- Casper College will promote Education for a Lifetime by:

- Increasing transferability of coursework and applicability of skills
- Improving retention, graduation, and student success rates
- Enhancing the use of current pedagogies and technologies
- Encouraging excellence in advising and support services for students
- Recruiting, retaining and developing highly qualified faculty, staff, and administrative employees
- Advancing intellectual maturity, vocational proficiency and cultural appreciation through remedial, general and technical education credit and noncredit courses and programs as needed
- Strengthening the college's ability to meet the current and future needs of the community and state through curricula, program offerings and partnerships
- Increasing diversity within student, faculty and staff populations
- Maintaining a safe environment for all who study, work and visit Casper College
- Utilizing, maintaining and improving college facilities and equipment
- Strengthening the role of the college as the cultural center of the region and as a community resource for social, civic, and economic improvement

## Casper College General Education Outcomes

All students are required to take 32 credit hours of general education. Some of these courses also count toward the AS degree in Medical Laboratory Technician. Underlying the themes of general education are student expectations for learning. Campus wide we are assessing student success in student outcome measure. As graduates of Casper College, students will be able to ...

1. Demonstrate effective oral and written communication
2. Use the scientific method
3. Solve problems using critical thinking and creativity
4. Demonstrate knowledge of diverse cultures and historical perspectives
5. Appreciate aesthetic and creative activities
6. Use appropriate technology and information to conduct research
7. Describe the value of personal, civic, and social responsibilities
8. Use quantitative analytical skills to evaluate and process numerical data

### Medical Laboratory Technician Program Mission Statement

The primary mission of the Casper College (CC) Medical Laboratory Technician (MLT) Program is student success and growth as technical professionals in clinical laboratory science. The MLT Program offers academic and vocational training in specialized laboratory skills and applied theory, as applied to medicine and patient care.

The program curriculum emphasizes technical competence and proficiency skills in areas of the clinical laboratory, as specified by national certifying agencies and employment practices. The program provides a career laddering approach in curriculum design and educational experiences to expedite student learning, comprehension, mastery and entry into healthcare professions. The student may progress through certificate and/or AS degree studies.

The MLT Program faculty serve the students, community and health care profession at large. Therefore, faculty appropriately emphasize quality classroom instruction, student advising, and complementary activities in education that promote student growth as laboratory professionals.

### Description of the Medical Laboratory Technician Profession

The medical laboratory technician is qualified by academic and applied science education to provide service in clinical laboratory science and related areas in rapidly changing and dynamic healthcare delivery systems. Medical laboratory technicians perform, evaluate, correlate and assure accuracy and validity of laboratory information; direct and supervise clinical laboratory resources and operations; and collaborate in the diagnosis and treatment of patients. The medical laboratory technician has diverse and multilevel functions in the areas of collecting, processing, and analyzing biological specimens and other substances, principles and methodologies, performance of assays, problem solving, troubleshooting techniques, significance of clinical procedures and results, principles and practices of quality assessment, for all major areas practiced in the contemporary clinical laboratory.

Medical laboratory technicians practice independently and collaboratively, being responsible for their own actions, as defined by the profession. They have the requisite knowledge and skills to educate laboratory professionals, other health care professionals, and others in laboratory practice as well as the public.

The ability to relate to people, a capacity for calm and reasoned judgment and a demonstration of commitment to the patient are essential qualities. Communications skills extend to consultative interactions with members of the healthcare team, external relations, customer service and patient education. Laboratory professionals demonstrate ethical and moral attitudes and principles that are necessary for gaining and maintaining the confidence of patients, professional associates, and the community.

### Career Options

Clinical analysis in the laboratory must be precise with results being factual, finite, and sometimes life threatening. Laboratory testing is accomplished through the use of a wide array of precise instruments such as microscopes, manual and automated analyzers, sorters and counters. Additionally, visual inspection critical thinking and decision making is often key to laboratory results and their interpretation. It takes both extensive and intensive training to develop the combination of competency and skill proficiency needed to work in a medical laboratory.

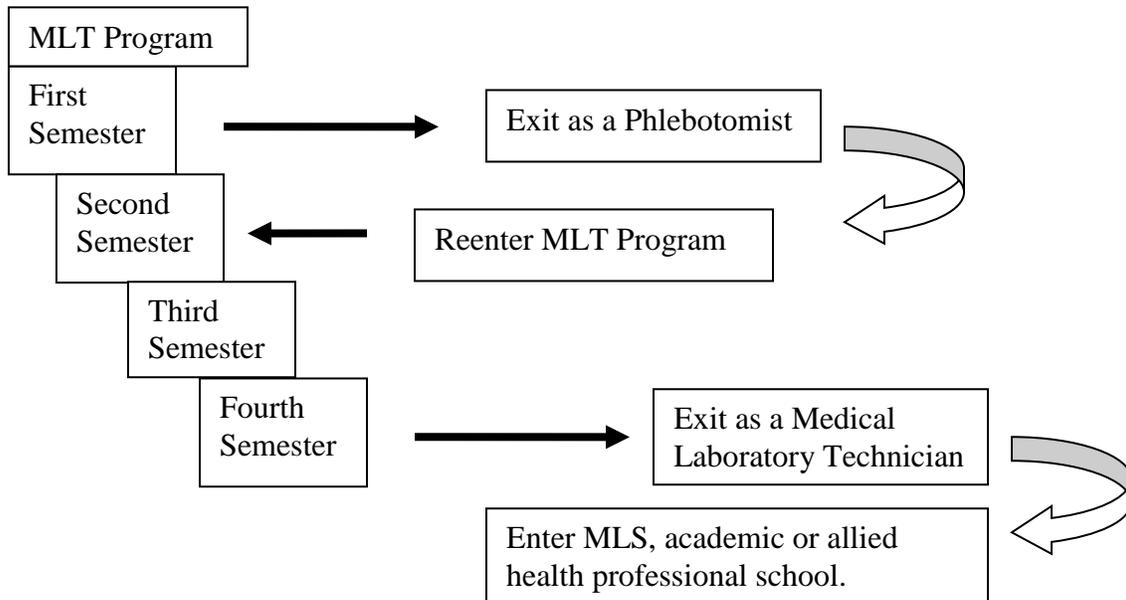
Other career options for medical laboratory technicians include:

- |                                |                      |
|--------------------------------|----------------------|
| Clinical Systems Analyst       | Medical Technologist |
| Diagnostic Geneticist          | Histotechnologist    |
| Diagnostic Molecular Scientist | Phlebotomist         |
| Forensic Scientists            | Clinical Assistant   |

Non-clinical opportunities for MLTs may include crime laboratories, computer applications, technical sales representative, insurance claims and management.

### Career Laddering

Using a career laddering approach to curriculum design allows students to enter into academic programs which exit in to certification eligible professions or continue on to advance their education and training for movement up the professional ladder. Furthermore, the MLT Program curriculum is articulated with University of Wyoming, BS Medical Laboratory Science degree and training so that students have flexibility in career planning and personalized educational pathways.



MLT Program curriculum is founded in basic science with additional course work specific for the clinical laboratory professions. This allows students to continue on to earn BS degrees in Medical Laboratory Science, Biology, Chemistry, Microbiology, Molecular Biology, Mathematics and Science.

#### MLT Program Goals

Graduates of the program must possess appropriate knowledge, skills and attributes to become competent practitioners. Additionally, students must be empowered with life-long learning skills that allow for their adaptation to changing technologies and new professional roles. The MLT program would provide training opportunities that encourage and practice the utilization of these skills to promote student success at the entry level profession with emphasis on their continual growth and career advancement.

#### MLT Program Goals:

- Provide quality learning and training opportunities in all areas of the clinical laboratory to build student skills, proficiency and competency.
- Provide appropriate levels of academic and laboratory training for students as they progress through the program.
- Include clinical, simulated or on-line laboratory experiences to promote adaptability of graduates to new technologies, responsibilities and career opportunities.
- Incorporate clinical experiences to provide students with marketable skills.
- Monitor the job market and appropriately counsel students for competitive employment.
- Provide graduates that can successfully complete appropriate certification exams and who are competitive in securing future employment.
- Provide the opportunity for certified MLT graduates to obtain baccalaureate degrees that build on their associate degree.
- Periodically undergo program review to meet the diverse educational needs of students, accreditation standards and industry demands for qualified, skilled practitioners.
- Promote membership and active participation in professional societies.
- Establish an advisory board of professionals for program development, evaluation and improvement.

#### Description of Entry Level Competencies of the Medical Laboratory Technician

At entry level, the medical laboratory technician will possess the entry level competencies necessary to perform routine clinical laboratory tests in areas such as Clinical Chemistry, Hematology/Hemostasis, Immunology, Immunohematology/Transfusion medicine, Microbiology, Urine and Body Fluid Analysis, and Laboratory Operations.

The level of analysis ranges from waived and point of care testing to complex testing encompassing all major areas of the clinical laboratory. The medical laboratory technician will have diverse functions in areas of pre-analytical, analytical, post-analytical processes. The medical laboratory technician will have responsibilities for

information processing, training, and quality control monitoring wherever clinical laboratory testing is performed.

At entry level, the medical laboratory technician will have the following basic knowledge and skills in:

- Application of safety and governmental regulations compliance;
- Principles and practices of professional conduct and the significance of continuing professional development;
- Communications sufficient to serve the needs of patients, the public and members of the health care team.

### MLT Program Curriculum

#### Instructional Areas

1. Prerequisite content in biological sciences, chemistry and mathematics that provides the foundation for course work required in the laboratory science program
2. MLT Program curriculum which includes pre-analytical, analytical and post-analytical components of laboratory services. This includes collecting, processing, and analyzing biological specimens and other substances, principles and methodologies, performance of assays, problem-solving, troubleshooting techniques, significance of clinical procedures and results, principles and practices of quality assessment, for all major areas practiced in the contemporary clinical laboratory. The program curriculum includes the following discipline specific, scientific content:

- a. Clinical Chemistry
- b. Hematology/Hemostasis
- c. Immunology
- d. Immunohematology/Transfusion medicine
- e. Microbiology
- f. Urine and Body Fluid Analysis
- g. Laboratory Operations
- h. Safety and governmental regulations compliance
- i. Principles and practices of professional conduct and the significance of continuing professional development
- j. Communications sufficient to serve the needs of patients, the public and members of the health care team

### MLTK Program Admissions/Eligibility

#### Eligibility Requirements:

To be considered for admission into the associate of science MLT program, the applicant must:

1. Have graduated from high school or have earned a GED;
2. Submit a completed application form with all high school and college transcripts and GED certification (if applicable) to the admissions office.

3. Have a composite score of 18 or better on the ACT if out of high school less than two years, and have completed courses recommended by the test with a “C” or better, or
4. Have taken the TailWind test and have completed courses recommended by the test with a “C” or better, or successfully completed college courses;
5. Students admitted to the MLT Program must be students in good standing at Casper College, must have earned a “C” or better in prerequisite and MLTK coursework, and have an overall GPA of 2.0.
6. An application to the MLT Clinical experience must be submitted to the Program Director once all prerequisite coursework has been completed and the student has successfully completed the entrance competency exam. Applications for the MLT Program are due during the fall semester prior to the clinical practice. Obtaining a clinical practice site is competitive and students will undergo an interview/selection process to determine and assign clinical practicum locations. Since training opportunities cannot be guaranteed, if students are not initially placed they will be placed on an alternate list for the next available training session.
7. Health Requirements: You will need to obtain proof of the following health requirements to train in phlebotomy and MLT student laboratory or clinical practice: Health Insurance; Health Provider BLS certification; Tuberculosis skin testing; Hepatitis B vaccination; Measles, Mumps Rubella and Tetanus vaccinations.

To maintain ongoing enrollment in the MLT program curriculum you may be required to meet annual requirements as specified by the clinical agency.

8. Students who have appropriate experience or certification as a phlebotomist may receive credit for Principles of Phlebotomy (MLTK 1800) and Clinical Practicum: Phlebotomy (MLTK 1970). Credit will be determined by the Registrar and the Director of the MLT Program.
9. Applicants must meet certain essential functions as defined by NAACLS. If you feel that you do not meet these essential functions, careful consideration should be made and advisement received before entering the MLT Program. Essential functions are the abilities and essential functions that a student must be able to perform to be successful in the learning experiences and completion of the program. Please obtain a MLT Program Student Handbook from the director of the MLT Program or visit the following Web site ([http://www.caspercollege.edu/medical\\_lab\\_tech/index.html](http://www.caspercollege.edu/medical_lab_tech/index.html)) to review these essential functions.

## MLT Program Essential Functions

### Essential Functions

These are the physical abilities that a student must be able to perform to be successful throughout the program curriculum and the profession.

#### Essential Observational Requirements:

The MLT student must be able to:

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

#### Essential Movement Requirements:

The MLT student must be able to:

- Move freely and safely about a laboratory.
- Reach laboratory bench-tops and shelves, patients lying in hospital beds or patients seated in specimen collection furniture.
- Travel to numerous clinical laboratory sites for practical experience.
- Perform moderately taxing continuous physical work, often requiring prolonged sitting, over several hours.
- Maneuver phlebotomy and culture acquisition equipment to safely collect valid laboratory specimens from patients.
- Control laboratory equipment (i.e., pipettes, inoculating loops, test tubes) and adjust instruments to perform laboratory procedures.
- Use an electronic keyboard to operate laboratory instruments and to calculate, record, evaluate, and transmit laboratory information .

#### Essential Communication Requirements:

The MLT student must be able to:

- Read and comprehend technical and professional materials.
- Follow verbal and written instructions in order to correctly and independently perform laboratory test procedures.
- Clearly instruct patients prior to specimen collection.
- Effectively, confidentially and sensitively converse with patients regarding laboratory tests.
- Communicate with faculty members, fellow students, staff, and other health care professionals verbally and in a recorded format.
- Independently prepare papers, prepare laboratory reports, and take paper, computer, and laboratory practical examinations.

#### Essential Intellectual Requirements for the Medical Laboratory Technology Program:

The MLT student must be able to:

- Possess these intellectual skills: comprehension, measurement, mathematical calculation, reasoning, integration, analysis, comparison, self-expression, and criticism.
- Be able to exercise sufficient judgment to recognize and correct performance.

#### Essential Behavioral Requirements:

The MLT student must:

- Be able to manage the use of time and be able to systematize actions in order to complete professional and technical tasks within realistic constraints.
- Possess the emotional health necessary to effectively employ intellect and exercise appropriate judgment.
- Be able to provide professional and technical services while experiencing the stresses of task-related uncertainty and a distracting environment.
- Be flexible and creative and adapt to professional and technical change.
- Recognize potentially hazardous materials, equipment, and situation and proceed safely in order to minimize risk of injury to patients, self, and nearby individuals.
- Adapt to working with unpleasant biologicals.
- Support and promote the activities of fellow students and of health care professionals.
- Realize that the promotion of peers helps furnish a team approach to learning, task completion, problem solving and patient care.
- Be honest, compassionate, ethical and responsible.
- Be forthright about errors or uncertainty.
- Be able to critically evaluate his or her own performance, accept constructive criticism, and look for ways to improve.
- Be able to evaluate the performance of fellow students and tactfully offer constructive comments.

#### Essential Academic Requirements:

The MLT student must:

- Be able to obtain relevant information from lectures, seminars, laboratory sessions or exercises, clinical laboratory practicums and independent study assignments.
- Be able to use computers based examinations to assess and improve educational outcomes of the program.
- Sit for examinations, both written and oral, complete written assignments, deliver presentations, and perform required laboratory practice with and without supervision.

#### Length of Program

The two year online hybrid MLT-AS curriculum is designed to be completed in 18 months of study (four semesters). A student may choose to take longer to complete the program however, all MLT courses must be completed within a three year period for the AS degree or 5 year period is completing the UW MLS degree program.

#### Financial Aid

Information about financial aid is available from the CC Enrollment Services, Financial Aid Office, located in the Gateway Building on campus or by phone at (307) 268-2323 or at [http://www.caspercollege.edu/enrollment\\_services/index.html](http://www.caspercollege.edu/enrollment_services/index.html) .

#### Academic Advising/Counseling

Academic advising, scheduling of classes, academic problems or plans for articulation into other BS degree programs are best handled within the Department of Medical Laboratory Technology. However, trained counselors are available at the Counseling Services on the third floor of the Gateway building, or by phone at 268-2267 or at <http://www.caspercollege.edu/counseling/index.html> .

#### Tutoring Resources

Tutorial help is available for students who need it for academic courses, and for required courses for the MLT Program. The college offers tutorial help for general education courses classes and assignments through the Math Lab, Oral Communication Lab, and Writing Center. The College also offers online tutoring through the online Kahn Academy, Studentlingo.com and Smarthinking learning resources. Further information is available at <http://www.caspercollege.edu/tutoring/index.html> .

#### Attendance Policy

Regular attendance for lab is required and arrival by the beginning of the class period is expected. Roll will be taken at every laboratory meeting. More than two (2) absences in campus lab are considered to be excessive and notification by mail may be made by the instructor. When absences in a class (online didactics and/or campus lab) are excessive, the instructor has the option of initiating an "administrative withdrawal".

The Casper College attendance policy can be found at

<http://catalog.caspercollege.edu/content.php?catoid=5&navoid=319#ClassAttendance> .

A student who is absent or late to class risks missing important information, quizzes, exams, and labs. Student labs will not be available for make-up and exams can only be made-up if prior arrangements have been made. It is the student's responsibility to keep track of assignments, exams, important due dates and scheduled dates for on-campus student laboratories. See each course syllabi for grading policies.

Regular attendance and being on time for clinical practicum is an important part of your preparation for being a dependable employee. Each work place has attendance and tardy guidelines which employees must follow. Absenteeism is grounds for dismissal from clinical training and is at the discretion of the clinical institute. The MLT program has designed the following guidelines in order to emphasize the importance of this aspect of training and employment professionalism. The guidelines will also assure continuity of instruction since both MLT faculty and clinical instructors believe that sporadic attendance interferes with the learning process.

#### The Following Guidelines Apply To Clinical Absences

1. Whenever possible, the clinical site must be notified of each absence or each late arrival at least 15 minutes prior to the expected time of arrival.

2. The student must report any absence to the Program Director.
3. A signed physician's statement or some other documentation (e.g., prescription receipt, etc.) must be submitted for an illness requiring more than 2 days of absence. The documentation must be turned in at the first clinical conference following the absences.
4. An illness requiring several days absence may result in an incomplete grade for the course and progression towards completion of the program. If it is a clinical rotation that is missed, then it will be rescheduled if it does not conflict with another student's scheduled time. Rescheduling will not be done without the approval from the clinical coordinator at the clinical site and the Program Director.
5. Absences are strongly discouraged. All clinical activities are scheduled in advance and student absences will not alter this schedule. Activities (lab exercises, exams, practicals) will not be rescheduled due to absences. Any late assignments, exams, practicals, etc. will be reduced as stated in each course syllabi.
6. Excessive absence will be grounds for dismissal and administrative withdrawal from the clinical rotation.

#### Requirements for Graduation

1. The MLT-AS Program curriculum must be completed. Please see Casper College Catalog.
2. A grade of "C" or better must be earned in all required courses for the MLT-AS Program degree. This includes general education and MLTK courses.
3. An overall 2.0 GPA is required by the College to graduate.
4. The student must discharge all financial obligations to the College.
5. The student must take a "mock" certification examination and earn a 75% or better score, prior to entering the clinical rotation.
6. The student must electronically submit a completed program exit survey and contact information that includes a permanent mailing, phone and email address.
7. The student must inform the Program Director of their employment status and employer contact information.
8. The student must make formal application for graduation. Specific dates are announced by the College Registrar and Enrollment Services.

#### Program Completion Awards

Upon satisfactory completion of the MLT-AS curriculum, and upon meeting all other graduation requirements, the graduate will receive the Associate of Science degree (AS) in MLT. The graduate is then eligible to take a national certification examination for MLT. Certification may be obtained through many agencies but the most recognized is Medical Laboratory Technician (American Society for Clinical Pathology Board of Registry)--MLT(ASCP)<sup>CM</sup>. Passing the national certification is not a requirement for receiving the AS Medical Laboratory Technician degree but students are encouraged to take a national certification as soon as they graduate as delays have been directly correlated to poor performances on the national examination.

## Student Behavior-Grounds for Dismissal

Students who conduct themselves in accordance with College, Clinical Affiliate and AS-MLT Program Policies should have no problems. Student conduct that can result in a faculty recommendation for disciplinary action, failure, or dismissal include the following but are not limited to:

- a. Inability or unwillingness on the part of the student to change his/her behavior to meet the objectives of the program in any one of the learning domains (psychomotor, affective, or cognitive) either on campus or in a clinical facility. (This may be a consequence of habitual tardiness or excessive absences.)
- b. Misconduct or unreasonable lack of skill or fidelity in performing professional duties.

For example:

1. Revealing the details of professional services rendered or confidences of a patient to the public
  2. Performing services requiring the professional competence of a licensed or certified health team member (e.g., physician, nurse, or radiology technician)
  3. Falsification of clinical records or reports
- c) Altering existing records or reports
  - d) Use of procedures or shortcuts that are not Casper College approved or institutional policy.
  - e) Performing professional duties, on college or clinical premises, under the influence of alcoholic beverages or any controlled substances as defined by the CC Student Code of Conduct.
  - f) Performing professional duties in such a manner as to cause harm to the patient (either intentional or unintentional)
  - g) Refusing to perform professional duties as assigned by clinical instructors
  - h) Failure to adhere to established rules and policies of the College or the clinical affiliates
    1. Willful damage, destruction, or theft of property
    2. Failure to maintain satisfactory working relationships with patients, supervisors, or colleagues
    3. Cheating on an examination, plagiarism or unprofessional conduct
    4. Conviction of a felony after admission to the program
    5. Maligning a patient, physician, or colleagues to the public
    6. Violation of CC regulations regarding the use and/or possession of firearms, alcoholic beverages or drugs without a prescription, or the appearance of students on campus under the influence of either.

Students will receive immediate feedback for any conduct violation. Misconduct will be evaluated and discussed during a private MLT counseling conference with necessary personnel. This may include the clinical supervisor, a Casper College faculty member and student. Complete termination from a clinical facility may result if the student is guilty of any of the above conditions. Termination automatically results in a grade of "F"

for the course and may cause the student to be ineligible for future clinical training and completion of the AS MLT degree program.

A student behavior contract may be established, providing guidelines for the successful completion of the clinical practicum. Students may be allowed to reenter the clinical practicum at a different clinical affiliate after they have met the demands of the behavior contract. The second clinical affiliate would be fully informed of the conduct violation, behavior contract, and reentry status of the student. The reinstatement of a student would be at the discretion of the second clinical affiliate, Program Director and the availability of training slots.

#### Readmission Policies

Students wishing to continue in the program after failing a clinical practicum course must reapply to the program and be processed in accordance with the MLT admission policy for new students. Students who are dismissed from the program may not reapply.

#### American Society for Clinical Laboratory Science-MLT Code of Ethics

##### Preamble

- The Code of Ethics of the American Society for Clinical Laboratory Science sets forth the principles and standards by which clinical laboratory professionals practice their profession.

##### Duty to the Patient

- Clinical laboratory professionals are accountable for the quality and integrity of the laboratory services they provide. This obligation includes maintaining individual competence in judgment and performance and striving to safeguard the patient from incompetent or illegal practice by others.
- Clinical laboratory professionals maintain high standards of practice. They exercise sound judgment in establishing, performing and evaluating laboratory testing.
- Clinical laboratory professionals maintain strict confidentiality of patient information and test results. They safeguard the dignity and privacy of patients and provide accurate information to other health care professionals about the services they provide.

##### Duty to Colleagues and the Profession

- Clinical laboratory professionals uphold and maintain the dignity and respect of our profession and strive to maintain a reputation of honesty, integrity and reliability. They contribute to the advancement of the profession by improving the body of knowledge, adopting scientific advances that benefit the patient, maintaining high standards of practice and education, and seeking fair socioeconomic working conditions for members of the profession.
- Clinical laboratory professionals actively strive to establish cooperative and respectful working relationships with other health care professionals with the primary objective of ensuring a high standard of care for the patients they serve.

### Duty to Society

- As practitioners of an autonomous profession, clinical laboratory professionals have the responsibility to contribute from their sphere of professional competence to the general well-being of the community.
- Clinical laboratory professionals comply with relevant laws and regulations pertaining to the practice of clinical laboratory science and actively seek, within the dictates of their consciences, to change those which do not meet the high standards of care and practice to which the profession is committed

### Pledge to the Profession

As a clinical laboratory professional, I strive to:

- Maintain and promote standards of excellence in performing and advancing the art and science of my profession.
- Preserve the dignity and privacy of others.
- Uphold and maintain the dignity and respect of our profession.
- Seek to establish cooperative and respectful working relationships with other health professionals.
- Contribute to the general well-being of the community.
- Actively demonstrate my commitment to these responsibilities throughout my professional life.

### Description of the Medical Laboratory Technician Program

The Medical Laboratory Technician Program is a series of educational experiences that allow students to complete incremental steps in content and technical skill mastery that parallel professional career development. The curriculum is based in science and general education coursework. Students must complete prerequisite coursework to be eligible to enter MLTK courses (BIOL 1000 or 1010, MOLB 2210 or 2240). Students who enter the program curriculum immediately begin their medical laboratory coursework while continuing to complete basic science courses. Student clinical practicum in phlebotomy may begin in the first semester of the program. Students who complete the phlebotomy certificate curriculum are eligible to sit for national phlebotomy certification examination.

Students who opt to continue on in their medical laboratory technician training take additional basic science courses and other specified MLTK course work and clinical practicums for an additional three semesters. Students must complete prerequisite clinical courses to be eligible to apply for the MLT Program and enroll in clinical practicum courses (MLTK 2970 series). The MLT Program is a competitive process that includes a formal written application, evaluation of academic performance and a personal interview with clinical affiliates for clinical practicum placement. Students are assigned to a clinical affiliate based upon a mutual decision between Casper College MLT Program, the clinical affiliate and the student. Those students who may not receive their first choice for placement may be placed at another clinical affiliate. Students have the right to refuse a clinical placement and students who are not initially assigned will be placed on an alternate list for the next available clinical session. Students who

successfully complete the coursework and clinical experiences would then be eligible to sit for national certification examinations offered for Medical Laboratory Technician.

Casper College Medical Laboratory Technician Faculty:

Bernardino Madsen, MLS (ASCP)	Program Director and Instructor
Dr. Audrey Hentzen MLS (ASCP) <sup>CM</sup>	Instructor
Mr. Jed Doxtater, MLS (ASCP) <sup>CM</sup>	Adjunct Instructor
Dr. Charlie Cruz MLS (ASCP)	Adjunct Instructor

Academic Plan with Career Vocational Training

The overall objective of the Medical Laboratory Technician Program is to develop professionals for a career in clinical laboratory science. The discipline includes six major disciplines: hematology, immunohematology (blood bank), clinical chemistry, microbiology, urinalysis, and immunology.

The program curriculum is composed of an academic component provided by Casper College and a clinical component that is experiential and provided by a contracted clinical affiliate such as a hospital or privately owned laboratory. Casper College serves as the centralized education management site for medical laboratory technician academic coursework and student laboratory experiences. These courses are delivered in a hybrid internet format. Didactic curriculum is delivered on-line with student laboratory sessions being concentrated and periodic. Completion of the Program leads to an Associate's of Science Degree in Medical Laboratory Technology. Program curriculum required for the Medical Laboratory Technician major would satisfy the guidelines established by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) for MLT professionals. You may contact NAACLS at:

National Accrediting Agency for Clinical Laboratory Sciences 5600 N. River Rd. Suite 720 Rosemont, IL 60018-5119	847.939.3597 773.714.8880 773.714.8886 (FAX) <a href="http://www.naacls.org">http://www.naacls.org</a>
---	---

Clinical experiences are scheduled during the last semester of a student's study plane with clinical practicums being available throughout the State of Wyoming through clinical affiliation contracts.

MLT Program Study Plan

A typical schedule for students enrolled in the MLT program as freshmen is given below. Some rearrangement of scheduling may be possible, but it is important to complete prerequisite courses on schedule or additional time may be needed beyond two years to complete the degree requirements.

Note: All MLTK courses are delivered in an online hybrid format. Didactic content will be delivered through the College's Learning Management System with 5-6 on campus labs each semester.

Program map

First Year Fall

First Year Spring

Course #	Course Title	Cr.	Course #	Course Title	Cr.
MATH 1000	Problem Solving	3 or	English 1010	English I: Composition	3
MATH 1400	Pre-Calculus Algebra	4	MLTK 1600	Clinical Immunohematology	3
MLTK 1500	Hematology	3	MLTK 1700	Microscopy: Urinalysis and Body Fluids	2
MOLB 2210	General Microbiology	4 or	MOLB 2600	Clinical Microbiology I	2
MOLB 2240	Medical Microbiology	4	BIOL 1000	Introduction to Biology I	4 or
CMAP 1505	Introduction to Computers	1	BIOL 1010	General Biology I	4
SOC 1000	Introduction to Sociology	3	CE course	Students als have the option to take PSCY or ANTH 1000 to fulfill the CE	3

First Year Summer

Course #	Course Title	Cr.
CHEM 1005	Basic Chemistry I	3
CHEM 1006	Basic Chemistry Lab I	1
	OR	
CHEM 1025	Chemistry I	3
CHEM 1028	Chemistry Lab I	1
MLTK 1800	Principles of Phlebotomy	3
MLTK 1970	Clinical Practicum: Phlebotomy	2
MLTK 1970		

Second Year Fall

Second Year Spring

Course #	Course Title	Cr.	Course #	Course Title	Cr.
ENG 1020	English II: Composition	3	MLTK 2971	Clinical Practicum: Hematology	2
MLTK 2500	Clinical Chemistry	3	MLTK 2972	Clinical Practicum: Chemistry	2
MLTK 2650	Clinical Microbiology II	2	MLTK 2973	Clinical Practicum: Immunohematology	2
MLTK 2700	Immunology	4	MLTK 2974	Clinical Practicum: Microbiology	2
POLS 1000	American and Wyoming Government	3	MLTK 2976	Clinical Practicum Serology	1
			MLTK 2977	Clinical Practicum: Urinalysis and Body Fluids	1
			MLTK 2800	Clinical Pathophysiology	4
			PEAC XXXX	Activity	1

Description of Clinical Experience

The clinical experience or professional practice component of the Medical Laboratory Technician Program is in the last semester. It is a period of time during which the student may be residing off campus and attending clinical practicums at a Casper College clinical affiliate. The off campus clinical experience is structured to provide clinical rotations through all departments of the laboratory including microbiology, serology, chemistry, urinalysis, blood bank and hematology.

The following internet hybrid courses make up the clinical practicum. Curriculum included intensive study and clinical hours in each laboratory discipline. You must complete all of the clinical practicum courses to receive the AS-MLT degree from Casper College and to be eligible for national certification examination.

MLTK 2800	Clinical Pathophysiology	4	16 weeks online and 5-1 day campus visits
MLTK 2971	Clinical Practicum:Hematology	2	4 weeks
MLTK 2972	Clinical Practicum:Chemistry	2	4 weeks
MLTK 2973	Clinical Practicum:Immunohematology	2	4 weeks
MLTK 2974	Clinical Practicum:Microbiology	2	4 weeks
MLTK 2976	Clinical Practicum:Serology	1	2 weeks
MLTK 2977	Clinical Practicum:UA/BF either	1	2 weeks overlapping Hem or Chem

#### List of Clinical Affiliates

Currently, the list below shows the contracted clinical affiliates that may offer clinical practicums. If you have interest in training at any other clinical facility, contact the Program Director to see if an affiliation agreement can be set up.

Banner Health, Washakie Medical Center, Wheatland, WY  
 Converse County Memorial Hospital, Douglas, WY  
 Campbell County Memorial Hospital, Gillette, WY  
 Cheyenne Regional Medical Center, Cheyenne, WY  
 Sheridan Memorial Hospital, Sheridan, WY  
 Star Valley Medical Center, Afton, WY  
 Sweetwater County Memorial Hospital, Rock Springs, WY  
 Wyoming Medical Center, Casper, WY  
 Community Health Center of Central Wyoming, Casper, WY  
 Castle Rock Medical Center, Green River, WY

#### Clinical Rotation Timeline:

The clinical practicum courses (MLTK 2970 series) start earlier than normal Casper College courses to accommodate the 18 week clinical rotation period. The start date is posted in the class schedule of courses. The schedule is planned to include spring break and graduation dates so students can be included in the graduation ceremony. Students are encouraged to go through the graduation ceremonies.

Each student is assigned to an individual rotation sequence. Students spend eight hours a day, five days a week working in the laboratory with holidays to be arranged by the clinical affiliate. Students must complete 40 hours each week which can be performed as five 8 hour or four 10 hour shifts. If the student is absent, clinical days will have to be made up. Students work one-on-one with technologists learning to operate equipment and apply knowledge gained in academic classes to clinical diagnosis. Opportunities for employment may become available, provided the student has achieved certain competencies. Students may not receive pay for clinical hours performed as course requirements.

#### Alternate Clinical placement policy:

If for any reason a student is displaced from clinical training (excluding academic/professional reasons), the CC-MLT program will work diligently to place the student at an alternate clinical training site the following semester.

#### Service Work

Students shall not take the responsibility or replace qualified staff. Students may, after demonstrating proficiency, with qualified supervision, be permitted to perform procedures. This will be determined and arranged by the clinical affiliate. Service work by students in clinical settings outside of regular academic hours must be noncompulsory. Students will not be excused from scheduled MLT assignments, laboratory exercises, clinical experiences, exams or practicals in order to perform service work. It is strictly against College policy for a student to receive pay for hours spent in a clinical, learning experience.

#### MLT Program Course Descriptions

##### Health and Insurance Documentation Requirements

You will need to obtain proof of the following health requirements to train in phlebotomy or MLT student laboratory or clinical affiliates.

Health Insurance (Private or available through Casper College)

Health Provider BLS certification

Tuberculosis testing (within the last year)

Hepatitis B vaccination (at least the first in the series of three)

Measles, Mumps Rubella and Tetanus (vaccination history)

Other immunizations or titers may be required by the clinical affiliate

Drug Screening and Background check as required by clinical affiliates

Proof of Driver's license and automobile insurance if driving to clinical experiences

## MLTK 1500 Clinical Hematology and Hemostasis

### Statement of Prerequisites:

BIOL 1000 or BIOL 1010 or MOLB 2210 or MOLB 2240 or instructor permission.

### Course Description:

An introductory course in the theoretical principles and procedures of hematology and hemostasis combined with relevant application to clinical laboratory medicine. This course provides background knowledge and opportunities to develop technical competencies for laboratory testing of blood, blood products, coagulation, and anticoagulant therapy. Emphasis is on the formed elements of the blood and components of the coagulation cascade and their correlation with pathophysiology.

### Outcomes/Objectives:

1. Distinguish normal and abnormal microscopic characteristics of blood cells through performance of a complete blood count.
  2. Perform manual and automated testing, assess laboratory data and predict the diagnosis of hematological and coagulation disorders and diseases.
  3. Correlate hematological findings with those generated in other areas of the clinical laboratory.
  4. Describe the origin and development of platelets.
  5. Relate platelet structure to physiology and function.
  6. List coagulation factors and describe their function in fibrin formation.
  7. Distinguish modes of action and therapeutic use of anticoagulants.
  8. Associate hemostatic dysfunction with clinical disease.
- Casper College General Education Outcomes
9. Solve problems using critical thinking and creativity (#3).

## MLTK 1600: Clinical Immunohematology

### Statement of Prerequisites:

BIOL 1000 or BIOL 1010 or MOLB 2210 or MOLB 2240 or instructor permission.

### Course Description:

Introductory course on the theoretical principles and procedures in immunohematology and serology (immunology) and their application in the medical laboratory. Emphasis is on blood banking procedures and potential problems that may be encountered in blood bank testing relative to antibody identification, compatibility testing, transfusion reactions and maternal/neonatal screening for hemolytic disease of the newborn. Course provides students with lectures and laboratory experience on immunohematology techniques.

### Outcomes/Objectives:

1. Evaluate patient specimen for acceptability for analyses.
2. Differentiate mechanisms of immune response.
3. Relate immunologic theory to performance of procedures in the blood bank and serology laboratory.
4. Describe characteristics of common blood group systems, perform and interpret ABO blood grouping and Rh typing and resolve ABO discrepancies.

5. List the types of component therapy and perform and interpret compatibility testing, antibody identification, prenatal and postnatal testing, with identification of errors and resolution of discrepancies.
6. Describe appropriate pre- and post-transfusion testing associated with components.
7. Describe pathophysiology and laboratory investigation of transfusion reactions and hemolytic disease of the newborn.
8. Describe mechanisms associated with altered immune response.
9. Discuss principles and procedures associated with tissue transplantation.
10. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
11. Critique patient results and select appropriate follow-up tests.  
Casper College General Education Outcomes
12. Solve problems using critical thinking and creativity (#3).

#### MLTK 1700: Microscopy: Urinalysis and Body Fluids

##### Statement of Prerequisites:

BIOL 1000 or BIOL 1010 or MOLB 2210 or MOLB 2240 or instructor permission.

##### Course Description:

1. Compare and contrast various types of microscopic techniques and their application in the clinical laboratory.
2. Describe the anatomy of the kidney and relate its structure to the process of urine formation.
3. Perform and interpret urine test results, detect abnormalities, assign a diagnosis and prescribe follow-up testing.
4. Describe how fluids such as spinal fluid, serous fluid, synovial fluid and amniotic fluid are formed.
5. Perform body fluid tests and interpret results, detect abnormalities, assign a diagnosis and prescribe follow-up testing.

##### Casper College General Education Outcomes

6. Demonstrate effective oral and written communication (#1).
7. Solve problems using critical thinking and creativity (#3 )
8. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
9. Describe the value of personal, civic, and social responsibilities (#7).
10. Use quantitative analytical skills to evaluate and process numerical data (#8).

#### MLTK 1800: Principles of Phlebotomy

##### Course Description:

This didactic and laboratory course will introduce the student to the profession and practice of phlebotomy. Course activities and projects provide the student with knowledge and skills necessary to perform a variety of blood collection methods using proper techniques and precautions including: vacuum collection devices, syringes, capillary skin puncture, butterfly needles and blood culture specimen collection on adults, children and infants. Emphasis will be placed on infection prevention, universal precautions, proper patient identification, specimen acquisition, handling, processing,

labeling, and quality assurance. Professional conduct, certification and federal regulatory issues will be covered as well.

Outcomes/Objectives:

1. Demonstrate a working comprehension of the technical and procedural aspects of laboratory testing, safety and ethical standards of practice.
2. Explain and apply basic principles of medical terminology, safety measures, universal precautions, infection control and potential sources of error as they relate to standard laboratory operating procedures and quality patient care.
3. Demonstrate technical skills by following established procedures for collecting and processing biological specimens for analysis.
4. Recognize unexpected results and instrument malfunction and take appropriate action for resolution.
5. Calculate, interpret, documentation of quality control data, and resolve out of control situations.
6. Professionally communicate laboratory information to patients, physicians and other authorized sources utilizing a variety of formats which may include, laboratory information systems computer technologies, telecommunications and direct patient conversation.
7. Demonstrate proficiency in laboratory technical skills through performance and instruction of other laboratory personnel.

Casper College General Education Outcomes

8. Demonstrate effective oral and written communication (#1).
9. Solve problems using critical thinking and creativity (#3)
10. Demonstrate knowledge of diverse cultures and historical perspectives ( #4).
11. Describe the value of personal, civic, and social responsibilities (#7).
12. Use quantitative analytical skills to evaluate and process numerical data (#8).

MLTK 1970: Clinical Practicum: Phlebotomy

Statement of Prerequisites: MLTK 1800 or concurrent enrollment or instructor permission.

Course Description:

This clinical laboratory practicum will introduce the student to the profession and practice of phlebotomy. Students will observe and practice phlebotomy skills and job tasks. Emphasis is placed on the application of phlebotomy knowledge and skills necessary to perform a variety of blood collection methods using proper techniques and precautions including: vacuum collection devices, syringes, capillary skin puncture, butterfly needles and blood culture specimen collection on adults, children and infants. Infection prevention, universal precautions, proper patient identification, specimen acquisition, handling, processing, labeling, and quality assurance are essential tasks associated with the profession. Patient confidentiality must be maintained at all times and professional conduct is expected and assessed as part of the student grade.

Outcomes/Objectives:

1. Demonstrate a working comprehension of the technical and procedural aspects of laboratory testing, safety and ethical standards of practice.

2. Demonstrate technical skills by following established procedures for collecting and processing biological specimens for analysis.
  3. Professionally communicate laboratory information to patients, physicians and other authorized sources utilizing a variety of formats which may include, laboratory information systems computer technologies, telecommunications and direct patient conversation.
  4. Demonstrate proficiency in laboratory technical skills through performance of venipuncture and microtechnique collection.
  5. Develop and demonstrate professional attitudes, behaviors and practice.
- Casper College General Education Outcomes
6. Solve problems using critical thinking and creativity (#3).
  7. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
  8. Describe the value of personal, civic, and social responsibilities (#7).

### MLTK 2500 Clinical Chemistry

#### Statement of Prerequisites:

CHEM 1005 and CHEM 1006 or CHEM 1025 and CHEM 1028, MATH 1000 or MATH 1400, and MLTK 1800 or instructor permission.

#### Course Description:

This course provides fundamental theory and principles of clinical chemistry, advanced instrumentation, and techniques used in clinical laboratories, pharmaceutical research and design, and biotechnology. Primary focus will be on student performance of diagnostic testing and its clinical correlation to disease states, preventive medicine and healthcare. Advanced topics in quality assurance, therapeutic drug monitoring and endocrinology will be discussed.

#### Outcomes/Objectives:

1. Perform, interpret and evaluate patient data and chemistry procedures given the proper procedures, reagents and equipment.
2. Perform, interpret and evaluate, necessary quality control and calibration procedures related to chemistry procedures given the proper procedures, reagents and equipment.
3. Explain and advocate the significance and value of quality control as it relates to quality assurance and patient care.
4. Perform, interpret, and initiate normal preventative maintenance on chemistry analyzers given the proper procedures, reagents and equipment.
5. Describe the basic biochemistry, physiology and pathology relevant to the practice of clinical laboratory medicine.
6. Describe concepts of clinical chemistry, testing methods, and correlate laboratory data with mechanisms of disease processes.
7. Describe key points of laboratory safety as it applies to clinical chemistry.
8. Describe various types of instruments, physical chemistry and techniques used in clinical chemistry analysis.
9. Describe the fundamental principles used in clinical instrument designs.
10. Compare, contrast and evaluate clinical instrument methodologies.
11. Describe techniques and statistical procedures that can be use to evaluate clinical data.

12. Relate the mechanisms and symptoms of toxicity to therapeutic drug monitoring and exposure to toxic substances.
13. Correlate pharmacokinetics to therapeutic drug monitoring.
14. Describe the biologic function of trace elements and vitamins and relate clinical findings to conditions associated with decreased or increased levels.
15. Correlate laboratory detection of tumor markers with cancers and metastatic disease.

#### Casper College General Education Outcomes

16. Demonstrate effective oral and written communication (#1).
17. Solve problems using critical thinking and creativity (#3 )
18. Describe the value of personal, civic, and social responsibilities (#7).
19. Use quantitative analytical skills to evaluate and process numerical data (#8).

#### MLTK 2600 Clinical Microbiology I

Statement of Prerequisites: MOLB 2210 or MOLB 2240 or instructor permission.

#### Course Description:

Concentrated laboratory instruction in clinical microbiology including methods for recovery, identification of pathogens, culture techniques, procedures, antibiotic testing and interpretation of clinical data. Emphasis is on clinical specimens, testing algorithms and data correlation including diagnosis, public health, and quality control. This course provides the essential overview of information and technical competencies needed for the clinical experience for medical laboratory technician majors.

#### Outcomes/Objectives:

1. Evaluate patient specimen acceptability for analysis.
2. Correlate clinical signs and symptoms associated with diseases caused by bacterial pathogens
3. Distinguish between normal flora and pathogenic organisms based upon colony characteristics.
4. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
5. Characterize key microscopic and macroscopic features of bacterial pathogens.
6. Perform and interpret various staining techniques.
7. Justify appropriate media for the cultivation of pathogens.
8. Compare and contrast clinical laboratory procedures, interpret data and predict the pathogen isolated.
9. Compare different antibiotic susceptibility test methods, interpret results of antimicrobial susceptibility tests and correlate with patient therapy.
10. Analyze unknown pathogens, select appropriate test methods, interpret results, and report out identification.
11. Critique patient results and select appropriate follow-up tests
12. Solve problems using critical thinking and creativity (#3)

#### MLTK 2650 Clinical Microbiology II

Statement of Prerequisites: MLTK 2600

### Course Description:

Concentrated laboratory instruction in clinical microbiology focusing on fastidious microorganisms, mycobacterium, parasites, viruses and pathogenic fungi. Laboratory skills will include the identification of pathogens, culture techniques, procedures, and interpretation of clinical data. This course provides an essential overview of information and technical competencies needed for the clinical experience for medical laboratory technician majors.

### Outcomes/Objectives

1. Evaluate patient specimen acceptability for analysis.
2. Correlate clinical signs and symptoms associated with diseases caused by viral, fungal and bacterial pathogens
3. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
4. Characterize key microscopic and macroscopic features of bacterial, viral, parasitic and fungal pathogens.
5. Perform and interpret various staining techniques.
6. Justify appropriate media for the cultivation of pathogens.
7. Compare and contrast clinical laboratory procedures, interpret data and predict differential diagnosis.
8. Analyze unknown pathogens, select appropriate test methods, interpret results, and report pathogen identification.
9. Critique patient results and select appropriate follow-up tests

### Casper College General Education Outcomes

10. Solve problems using critical thinking and creativity (outcome #3)

### MLTK 2700 Immunology

Statement of Prerequisites: MLTK 2650 or concurrent enrollment or instructor permission.

### Course Description:

Advanced biology course of immune systems: cellular and molecular mechanisms; host resistance to infectious agents; as well, as hypersensitivities, autoimmunity, tumor and tissue rejection. Includes laboratory for molecular and immunological techniques.

### Outcomes/Objectives:

1. Describe components of the immune system, their functional interactions and physiology as it relates to immunity, disease states and disorders.
2. Perform immunology, serology and molecular assays using a variety of techniques, evaluate clinical data, interpret results, and correlate abnormal results with disease states.
3. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
4. Evaluate patient specimen acceptability for serological analysis.
5. Operate clinical instruments, evaluate results, identify errors and resolve malfunctions.
6. Critique patient results and select appropriate follow-up tests.
7. Compare and contrast clinical laboratory procedures, interpret data and predict diagnosis.

8. Compare and contrast immunoassays, including dual-platform instrumentation for chemical and immuno- based assays.
9. Explain the use of the Southern transfer and hybridization techniques in the application of DNA fingerprinting and human genomic identity testing.
10. Analyze and interpret restriction fragment polymorphism patterns and relate these to paternity and crime scene investigations.
11. Describe and evaluate types of target sequences (DNA, mRNA, tRNA, rRNA).
12. Describe the amplification process of PCR including:
  - i. Basic steps of an amplification process
  - ii. Principles of the methodology
  - iii. List and describe the function PCR components in the reaction mix
13. Explain the application of PCR to STR testing.

Casper College General Education Outcomes

14. Demonstrate effective oral and written communication (#1).
15. Solve problems using critical thinking and creativity (#3 )
16. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
17. Describe the value of personal, civic, and social responsibilities (#7).
18. Use quantitative analytical skills to evaluate and process numerical data (#8).

MLTK 2800 Clinical Pathology

Statement of Prerequisites: MLTK 1500, 1600, 1700, 2500, 2600, 2650, and 2700.

Course Description:

Advanced topics in clinical chemistry, microbiology, immunohematology, serology, hematology, laboratory management, professional development and laboratory regulatory issues. Students are presented with clinical scenarios for evaluation, interpretation, development of decision-making strategies and resolution. Clinical cases involve advanced principles of clinical laboratory medicine and management.

Outcomes/Objectives:

Outcomes:

1. Evaluate case histories to identify significant data that focuses on the dilemma or patient illness.
2. Gather resource information for the development of a follow-up or confirmatory testing algorithms, differential diagnosis, clinical correlation and prognosis.
3. Based upon clinical scenarios or dilemma, develop decision-making strategies that lead to conflict resolution or implementation of a management plan to improve laboratory effectiveness.
4. Evaluate and incorporate considerations of laboratory resources, instrumentation, personnel and Federal regulations in predicting laboratory trends and changes.

Casper College General Education Outcomes

5. Demonstrate effective oral and written communication (#1).
6. Solve problems using critical thinking and creativity (#3 )
7. Describe the value of personal, civic, and social responsibilities (#7).

MLTK 2971 Clinical Practicum: Hematology

Statement of Prerequisites: MLTK 1500, 1600, 1700, 2500, 2600, 2650 and 2700.

Access to computer technology and internet services.

#### Course Description:

This is an advanced course and clinical laboratory experience in the principles and procedures of hematology. It is an on-line supported, off-campus clinical laboratory experience taught by clinical faculty. Emphasis is on the application of knowledge and technical skills to clinical testing, methodology, instrumentation, quality control, correlation of laboratory data with pathophysiology, OSHA practices and medical laboratory technician professionalism are included.

#### Outcomes/Objectives

1. Evaluate patient specimen as acceptability for analyses.
2. Report patient results according to established department protocol.
3. Correlate patient results with patient's condition.
4. Perform and interpret various laboratory procedures.
5. Operate clinical instruments, evaluate results, identify errors and resolve malfunctions.
6. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
7. Critique patient results and select appropriate follow-up tests.
8. Professionally communicate laboratory information to patients, physicians and other authorized sources utilizing a variety of formats which may include, laboratory information systems computer technologies, telecommunications and direct patient conversation.
9. Develop and demonstrate professional attitudes, behaviors and practice.
10. Student will follow OSHA safety precautions while performing laboratory duties.

#### Casper College General Education Outcomes

11. Demonstrate effective oral and written communication (#1).
12. Solve problems using critical thinking and creativity (#3)
13. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
14. Describe the value of personal, civic, and social responsibilities (#7).
15. Use quantitative analytical skills to evaluate and process numerical data (#8).

#### MLTK 2972 Clinical Practicum: Chemistry

Statement of Prerequisites: MLTK 1500, 1600, 1700, 2500, 2600, 2650, and 2700.

Access to computer technology and internet services.

#### Course Description:

This is an advanced course and clinical laboratory experience in the principles and procedures of clinical chemistry. It is an on-line supported, off-campus clinical laboratory experience taught by clinical faculty. Emphasis is on the application of knowledge and technical skills to clinical testing, methodology, instrumentation, quality control, correlation of laboratory data with pathophysiology, OSHA practices and medical laboratory technician professionalism are included.

#### Outcomes/Objectives:

1. Evaluate patient specimen as acceptability for analyses.
2. Report patient results according to established department protocol.
3. Correlate patient results with patient's condition.
4. Perform and interpret various laboratory procedures.

5. Operate clinical instruments, evaluate results, identify errors and resolve malfunctions.
6. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
7. Critique patient results and select appropriate follow-up tests.
8. Professionally communicate laboratory information to patients, physicians and other authorized sources utilizing a variety of formats which may include, laboratory information systems computer technologies, telecommunications and direct patient conversation.
9. Develop and demonstrate professional attitudes, behaviors and practice.
10. Student will follow OSHA safety precautions while performing laboratory duties.

#### Casper College General Education Outcomes

11. Demonstrate effective oral and written communication (#1).
12. Solve problems using critical thinking and creativity (#3)
13. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
14. Describe the value of personal, civic, and social responsibilities (#7).
15. Use quantitative analytical skills to evaluate and process numerical data (#8).

#### MLTK 2973 Clinical Practicum: Immunohematology

Statement of Prerequisites: MLTK 1500, 1600, 1700, 2500, 2600, 2650, and 2700.

Access to computer technology and internet services.

#### Course Description:

This is an advanced course and clinical laboratory experience in the principles and procedures of immunohematology. It is an on-line supported, off-campus clinical laboratory experience taught by clinical faculty. Emphasis is on the application of knowledge and technical skills to clinical testing, methodology, instrumentation, quality control, correlation of laboratory data with pathophysiology, OSHA practices and medical laboratory technician professionalism are included.

#### Outcomes/Objectives:

1. Evaluate patient specimen as acceptability for analyses.
2. Report patient results according to established department protocol.
3. Correlate patient results with patient's condition.
4. Perform and interpret various laboratory procedures.
5. Operate clinical instruments, evaluate results, identify errors and resolve malfunctions.
6. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
7. Critique patient results and select appropriate follow-up tests.
8. Professionally communicate laboratory information to patients, physicians and other authorized sources utilizing a variety of formats which may include, laboratory information systems computer technologies, telecommunications and direct patient conversation.
9. Develop and demonstrate professional attitudes, behaviors and practice.
10. Student will follow OSHA safety precautions while performing laboratory duties.

#### Casper College General Education Outcomes

11. Demonstrate effective oral and written communication (#1).
12. Solve problems using critical thinking and creativity (#3 )
13. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
14. Describe the value of personal, civic, and social responsibilities (#7).
15. Use quantitative analytical skills to evaluate and process numerical data (#8).

#### MLTK 2974 Clinical Practicum: Microbiology

Statement of Prerequisites: MLTK 1500, 1600, 1700, 2500, 2600, 2650, and 2700.

Access to computer technology and internet services.

#### Course Description:

This is an advanced course and clinical laboratory experience in the principles and procedures of clinical microbiology. It is an on-line supported, off-campus clinical laboratory experience taught by clinical faculty. Emphasis is on the application of knowledge and technical skills to clinical testing, methodology, instrumentation, quality control, correlation of laboratory data with pathophysiology, OSHA practices and medical laboratory technician professionalism are included.

#### Outcomes/Objectives:

1. Evaluate patient specimen as acceptability for analyses.
2. Report patient results according to established department protocol.
3. Correlate patient results with patient's condition.
4. Perform and interpret various laboratory procedures.
5. Operate clinical instruments, evaluate results, identify errors and resolve malfunctions.
6. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
7. Critique patient results and select appropriate follow-up tests.
8. Professionally communicate laboratory information to patients, physicians and other authorized sources utilizing a variety of formats which may include, laboratory information systems computer technologies, telecommunications and direct patient conversation.
9. Develop and demonstrate professional attitudes, behaviors and practice.
10. Student will follow OSHA safety precautions while performing laboratory duties.

#### Casper College General Education Outcomes

11. Demonstrate effective oral and written communication (#1).
12. Solve problems using critical thinking and creativity (#3)
13. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
14. Describe the value of personal, civic, and social responsibilities (#7).
15. Use quantitative analytical skills to evaluate and process numerical data (#8).

#### MLTK 2976 Clinical Practicum: Serology

Statement of Prerequisites: MLTK 1500, 1600, 1700, 2500, 2600, 2650, and 2700.

Access to computer technology and internet services.

#### Course Description:

This is an advanced course and clinical laboratory experience in the principles and procedures of serology. It is an on-line supported, off-campus clinical laboratory experience taught by clinical faculty. Emphasis is on the application of knowledge and technical skills to clinical testing, methodology, instrumentation, quality control, correlation of laboratory data with pathophysiology, OSHA practices and medical laboratory technician professionalism are included.

Outcomes/Objectives:

1. Evaluate patient specimen as acceptability for analyses.
2. Report patient results according to established department protocol.
3. Correlate patient results with patient's condition.
4. Perform and interpret various laboratory procedures.
5. Operate clinical instruments, evaluate results, identify errors and resolve malfunctions.
6. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
7. Critique patient results and select appropriate follow-up tests.
8. Professionally communicate laboratory information to patients, physicians and other authorized sources utilizing a variety of formats which may include, laboratory information systems computer technologies, telecommunications and direct patient conversation.
9. Develop and demonstrate professional attitudes, behaviors and practice.
10. Student will follow OSHA safety precautions while performing laboratory duties.

Casper College General Education Outcomes

11. Demonstrate effective oral and written communication (#1).
12. Solve problems using critical thinking and creativity (#3)
13. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
14. Describe the value of personal, civic, and social responsibilities (#7).
15. Use quantitative analytical skills to evaluate and process numerical data (#8).

MLTK 2977 Clinical Practicum: Urinalysis and Body Fluids

Statement of Prerequisites: MLTK 1500, 1600, 1700, 2500, 2600, 2650, and 2700.

Access to computer technology and internet services.

Course Description:

This is an advanced course and clinical laboratory experience in the principles and procedures of urinalysis and body fluid analysis. It is an on-line supported, off-campus clinical laboratory experience taught by clinical faculty. Emphasis is on the application of knowledge and technical skills to clinical testing, methodology, instrumentation, quality control, correlation of laboratory data with pathophysiology, OSHA practices and medical laboratory technician professionalism are included.

Outcomes/Objectives:

1. Evaluate patient specimen as acceptability for analyses.
2. Report patient results according to established department protocol.
3. Correlate patient results with patient's condition.
4. Perform and interpret various laboratory procedures.

5. Operate clinical instruments, evaluate results, identify errors and resolve malfunctions.
6. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
7. Critique patient results and select appropriate follow-up tests.
8. Professionally communicate laboratory information to patients, physicians and other authorized sources utilizing a variety of formats which may include, laboratory information systems computer technologies, telecommunications and direct patient conversation.
9. Develop and demonstrate professional attitudes, behaviors and practice.
10. Student will follow OSHA safety precautions while performing laboratory duties.

Casper College General Education Outcomes

11. Demonstrate effective oral and written communication (#1).
12. Solve problems using critical thinking and creativity (#3)
13. Demonstrate knowledge of diverse cultures and historical perspectives (#4).
14. Describe the value of personal, civic, and social responsibilities (#7).
15. Use quantitative analytical skills to evaluate and process numerical data (#8).

Sample articulation curriculum plan

Students who enter the MLT Program may choose to continue on in their education and clinical laboratory training to earn a Bachelor's of Science degree in Medical Laboratory Science (MLS). Students that have completed the AS MLT degree and other specified curriculum would be eligible to apply and transfer to baccalaureate degree programs. To be fully articulated, students should meet with MLT advisors and select appropriate alternate course-work to meet MLS program requirements of the transfer program. The AS degree in Medical Laboratory Technician is fully articulated with the University of Wyoming Medical Laboratory Scientist (MLS) BS degree program. However, the student may apply to other MLS BS degree programs.

CC MLT - UW MLS Articulation (Draft as 9/10/14)

Year 1

Fall	Spring
CHEM 1020 (4)	CHEM 1030 (4)
MAT 1400 (4)	LIFE 1010 (4)
MLTK 1800 (3)	MLTK 1970 (3)
GenEd (3)	COSC 1200 (3)

Year 2

Fall	Spring
MOLB 2210 or 2240 (4)	MLTK 2600 (2)
CHEM 2300 (4)	LIFE 3610 (4)
STAT 2050 (4)	GenEd (6)
GenEd (3)	

Year 3

Fall

MOLB 4400 or 2700 (4)  
LIFE 3050 (4)  
MLTK 1500 (3)  
MLTK 2500 (3)  
MLTK 2650 (2)

Spring

MLTK 1600 (3)  
MLTK 1700 (2)  
LIFE 3600 (4)  
Gen Ed (6)

Year 4 (3 + 1 MLS Program)

Fall

MLTK 2971 (2)  
MLTK 2972 (2)  
MLTK 2973 (2)  
MLTK 2974 (2)  
MLTK 2976 (1)  
MLTK 2800 (4)

Spring

MLTK 4971 (2)  
MLTK 4972 (2)  
MLTK 4973 (2)  
MLTK 4974 (2)  
MLTK 4840 (2)  
MLTK 4850 (2)  
MLTK 4860 (2)

Year 3 (2 + 2 MLS Program)

Junior

Fall

CHE 1030 (4)  
STAT 2050 (4)  
LIFE 3050 (4)  
GenEd (3)

Spring

CHEM 2300 (4)  
LIFE 3600 (4)  
GenEd (6)

Year 4 (2 + 2 MLS Program)

Fall

LIFE 3610 (4)  
COSC 1200 (3)  
GenEd (6)

Spring

MLTK 4971 (2)  
MLTK 4972 (2)  
MLTK 4973 (2)  
MLTK 4974 (2)  
MLTK 4840 (2)  
MLTK 4850 (2)  
MLTK 4860 (2)

Projected Demand for Graduates

The American Society for Clinical Pathology (ASCP) “20012 Vacancy Survey of US Medical Laboratories” predicts a Medical Laboratory Technician vacancy rates of 3-8% nationally for laboratory disciplines. Microbiology is the low end with Hematology, Immunology in the middle and Molecular, Chemistry and Toxicology on the high end. The ASCP “Wage and Vacancy Report from 2013” also found that overall, certified

MLT staff earn more. Additionally, this report indicates that the highest vacancy rates for Medical Laboratory Technicians is in hospitals with less than 100 beds, in other words, rural hospital settings. Additionally, 68.3% of supervisors questioned, report that certification is a prerequisite for candidates for hire. Results indicate that 83-90% of the staff and supervisors are certified personnel. To see these reports go to [ascp.org](http://ascp.org).

#### Wyoming Medical Laboratory Personnel Vacancy

Regionally, Wyoming healthcare institutions advertise nationally to recruit qualified, skilled, certified laboratory personnel. Some advertisements specify MLS (ASCP) personnel while others advertise for qualified MLT/MLS personnel. The Far West Region of the US shows the highest vacancy rates as reported in the ASCP 2013 report. As the need for certified personnel increases (retirements and professional demand), the need for graduates from either MLT or MLS programs will increase as well.

#### Assessing Student Learning and Progression through the Program

Students will be assessed periodically throughout the courses of the program curriculum with feedback for remediation and for success. A MLT Counseling session may be initiated by the student, faculty or clinical affiliate as a starting point for conversation, remediation or behavioral contracts focused on success. Each course has periodic assessments that are focused on didactic and practical skills. Students must earn a "C" or better in all MLT AS degree required courses, have a GPA of 2.0 or better, pass the pre-clinical competency test with a 70% or better, and be a student in good standing at Casper College to be eligible to apply for clinical practice.

#### Grading Policies

The method of calculating each course grade is explained in the individual course syllabi. The method of calculation for each clinical rotation is explained on each of the clinical practicum evaluation forms. Examinations will be graded immediately after being completed and the scores given to the students on the same day if possible. All final examinations must be taken as stated in course syllabi. Comprehensive finals will be given at the end of each semester course and a pre-clinical competency test will be given prior to admission to the clinical practicum.

Part or all of the examinations may be of a "practical" nature. In the event that it is impossible for a student to take an examination at the scheduled time, the instructor may offer an alternative, or make-up test. It is the student's responsibility to:

- a. furnish proof of an emergency
- b. arrange to take the examination
- c. in advance if possible
- d. at the time designated by the instructor

The MLT faculty reserves the right to administer a different examination over the same material to a student who misses the original scheduled test. The grades of all tests, quizzes, activities, unit examination, and finals will be used to calculate the semester grade in accordance with the course syllabi. A grade of "Zero" will be recorded for each component (other than the semester final) which is not completed. The semester final

must be taken. A grade of "Zero" will be recorded if the student is observed cheating on an examination and the student will be reported to Vice President of Student Services for judicial proceedings (see Student Code of Conduct, Casper College Student Handbook for proceedings and appeals process). Satisfactory (letter grade of "C" or better) completion of academic courses and clinical practicums must be accomplished in order to complete the AS Degree.

Clinical experiences will be one-on-one, with immediate feedback provided on a daily basis as well as through formal lines of communication and documentation of student assignments, exams, and practicals. A failure in any one of the clinical practical courses (MLT 2971-2977) will result in failure to meet AS MLT degree requirements for graduation.

#### Certification Eligibility and Examination

Upon completion of the MLT program, students will be expected to sit for national certification examinations. Student success and passing of these examinations are increased when students take the exam within 1-3 months after completion of the program. If you delay taking the exam, statistics show that students are less likely to pass the national exam. Passing the exam is an indicator of individual student success and quality of program educational experiences. Students are not required to obtain a passing score on national certification examinations to complete the AS MLT degree requirements. Students would be eligible to sit for the national certification examination as a MLT generalist, testing for competence in all areas of the clinical laboratory as a medical laboratory technician.

#### Certification Agencies

ASCP Board of Certification  
33 West Monroe St, Suite 1600  
Chicago, IL 60603  
800-267-2727 option 2, 1  
<http://www.ascp.org>

American Medical Technologists  
10700 West Higgins, Suite 150  
Rosemont, IL 60018  
800.275.1268  
<http://www.amt1.com>

American Association of Bioanalysts  
906 Olive Street, Suite 1200  
St. Louis, MO 63101-1  
314.241.1445  
<http://www.aab.org>

#### Program Evaluation

Students will be surveyed upon completion of the program (exit survey), and one year after graduation to assess student success in learning, employability, professional growth and program effectiveness. Graduate rates, graduate employment rates, employer surveys, and student alumni surveys will be used to assess student satisfaction with the program, learning, preparedness for employment, employment success, employer satisfaction with graduate competencies and skill proficiencies.

#### Program Accreditation Process

The National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) is a nonprofit organization that independently accredits laboratory professional training programs such as medical laboratory scientist (MLS), medical laboratory technician (MLT), histotechnologist (HTL), histologic technician (HT), pathologists' assistant (Path Asst), diagnostic molecular scientist (DMS) and cytogenetic technology (CT). Additional information can be obtained in writing at NAACLS, 5600 N. River Rd. Suite 720 Rosemont, IL 60018-5119 or online at <http://www.naacls.org>.

A maximum accreditation was awarded to the Casper College MLT in 2012, showing that program curriculum and educational experiences meet the NAACLS standards for Medical Laboratory Technician education. Accreditation is a process of external peer review in which an agency grants public recognition to a program of study or an institution that meets established qualifications and educational standards. Participation in the accreditation process is voluntary since there is not a legal requirement for specialized programs and institutions to participate. However, when students complete a NAACLS accredited program they become eligible to sit for national certification examinations for the profession.

#### Professional Societies

Clinical laboratory science societies are organizations that are made up of professional members who are practitioners. They provide leadership and promote the profession, practice and advancement of the clinical laboratory science role in health care.

Contact information:

#### American Society for Clinical Laboratory Science

2025 M Street NW, Suite 800

Washington, DC 20036

Phone 202.367.11743

<http://www.ascls.org>

#### American Medical Technologists

10700 West Higgins, Suite 150

Rosemont, IL 60018

800.275.1268

<http://www.amtl.com>

#### American Association of Bioanalysts

906 Olive Street, Suite 1200

St. Louis, MO 63101-1  
314.241.1445  
<http://www.aab.org>

#### Licensure

A license is a documented permit, issued by a government agency, either municipal or state, that grants the bearer permission to perform a particular service or procedure.

Often, the applicant must:

- Meet educational and experience requirements set by the agency
- Show national certification
- Show continuing education

The State of Wyoming does not require a license to perform phlebotomy or medical laboratory testing. However, hospitals and laboratories are under Federal guidelines for clinical personnel (Clinical Laboratory Improvement Act of 1988) that require MLT or MLS certification to perform human tests.

## MLT Professional Pledge

As a clinical laboratory professional, I strive to:

- Maintain and promote standards of excellence in performing and advancing the art and science of my profession
- Preserve the dignity and privacy of others
- Uphold and maintain the dignity and respect of our profession
- Seek to establish cooperative and respectful working relationships with other health professionals
- Contribute to the general well-being of the community.

I will actively demonstrate my commitment to these responsibilities throughout my professional life.

---

Signature

---

date

## Signature Sheet

Signing this document verifies that you have read and understand the policies and guidelines outlined in this student handbook. You agree to abide by these policies while enrolled in MLTK courses and clinical experiences. Signing this form indicates your understanding of, and your willingness to comply with these policies.

My signature below indicates that I have read the MLT-AS Program Policies contained in this student handbook in full, and understand that this program has academic, performance, and behavioral standards, as well as essential functions that I must be able to meet to be successful and progress in the program curriculum, and serve as a professional. My signature indicates that I understand these regulations and am willing to comply with them.

My signature below indicates that I understand that the Chromebook provided to me is custom tailored for the MLTK program. As a student in the hybrid online MLTK program, it is my responsibility to have internet access and provide care and security of the Chromebook. The Chromebook is to be utilized to complete all didactic and clinical work utilizing, Moodle, Google docs, Google slides, Google drive, etc.

My signature below indicates that I understand that I am financially responsible for any emergency care which I might receive as a result of illness or injury while enrolled in any MLTK course or while assigned to a clinical affiliate of the Casper College MLT-AS Program.

Signature:

---

Signature

---

Date

---

Printed name

