MOBERLY AREA COMMUNITY COLLEGE

Medical Laboratory Technician Program

Student Policy Handbook 2014

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Moberly Area Community College does not discriminate on the basis of race, color, national origin, sex, disability, age, and marital or parental status in admissions, programs and activities, and employment.

Inquiries concerning Section 504 of the Rehabilitation Act of 1973, which guarantees access to education regardless of disability, should be directed to:

Megan Halloran
Office of Access and ADA services
101 College Avenue
Moberly, MO 65270
660-263-4110 ext. 278

All other inquiries concerning nondiscrimination, including equal opportunity and Title IX, should be directed to one of the following people:

Dr. Jackie Fischer
Office of Academic Affairs
101 College Avenue
Moberly, MO 65270
660-263-4110 ext. 11236

Pat Twaddle, Director
Career and Placement Services
101 College Avenue
Moberly, MO 65270
660-263-4110 ext. 11232

MEDICAL LABORATORY TECHNICIAN PROGRAM FACULTY

Kristine Hayes, MAT MLS (ASCP)^{cm} MLT Program Coordinator
AAS - MLT – George Washington Univ.
BA – George Fox University
MAT – George Fox University

Susan Martin MT(ASCP) – Clinical coordinator & MLT 150 instructor
Wally Thomas SBB MT(ASCP) – MLT 250 (Coagulation)
Lois Pasley MT(ASCP) – MLT270 Immunohematology
Anita Smith, MT(AMT), MBA – MLT 220 Clinical Chemistry
Carmen Oberlag SH, MT(HEW) – MLT250 Hematology

MOBERLY AREA COMMUNITY COLLEGE

APPLIED ASSOCIATE OF SCIENCE DEGREE

MEDICAL LABORATORY TECHNICIAN
STUDENT HANDBOOK

Purpose of the Handbook:

This handbook provides, in one document, pertinent data, policies and procedures for students enrolled in the Medical Laboratory Technician (MLT) Program. It is essential that students understand the information present in this handbook to facilitate their progression through the MLT Program. This handbook and the student's faculty advisor are excellent resources. Students should read the MLT Student Policy Handbook carefully and ask the MLT Program Coordinator or student advisor for clarification of any policies or procedures that are unclear. The student handbook has been designed to be used in conjunction with the Moberly Area Community College catalog.

An acknowledgement form that appears in Appendix 7 states that the student agrees to follow these policies and procedures while enrolled as a student in the MLT program.

Students must read the entire handbook, sign the following forms, and turn them in to the MLT Program Coordinator by the end of the first week of class.

Acknowledgement Form
Confidentiality Form
HIV Statement
Student Insurance Agreement

The Medical Laboratory Technology program reserves the right to make changes in any material contained within the Handbook. Students will receive revisions if they occur.

Philosophy and Mission Statement

The mission of Moberly Area Community College (MACC) is to foster excellence in learning and provide every individual with a chance to succeed. The Medical Laboratory Technician program, as well as the phlebotomy program, support this mission. They have both been developed under the framework of, and consistent with, the philosophy of the college. This program will prepare graduates to join medical professionals in a clinical laboratory setting. Many career opportunities are open to medical laboratory technicians and phlebotomists, including the following for both:

- Staff in private and public health laboratories and hospital laboratories;
- Research and development of new test procedures, products, and equipment;
- Research and quality control in industry positions;
- Sales distribution of pharmaceuticals or laboratory products;
- Forensic laboratories;
- Education and training programs for medical laboratories;

And these for Medical laboratory technicians

- Specialized positions in hematology, clinical chemistry, clinical microbiology, parasitology, mycology, virology, serology, blood banking, hemostasis, toxicology, or molecular biology;
- Technical specialists to teach new procedures and instrumentation.

Equal opportunities exist for men and women. MACC'S Medical Laboratory Technician and phlebotomy programs prepare individuals to work successfully in these environments.
In keeping with the college's pursuit of excellence, the program's structure includes didactic instruction as well as clinical training in a variety of settings taught by qualified instructors from a variety of backgrounds. The programs strive to develop graduates who demonstrate technical competence and sound decision-making skills. They promote concern for patient welfare and an awareness of ethical, professional behavior. Developers believe that operation of the MLT and phlebotomy programs in area health care facilities strengthens the healthcare team. Faculty and clinical instructors become stronger clinical professionals when they provide information, direction, and guidance to students. The public becomes aware of a group who provides essential information in health care delivery. Central Missouri benefits because well-trained laboratory professionals assume their places on the health care team.

Medical Laboratory Technician & Phlebotomy Program Goals

The goals of the Moberly Area Community College Medical Laboratory Technician and phlebotomy programs are the following:

- To provide students with a body of knowledge and clinical training to develop entry-level competencies in all routine areas of the clinical laboratory;
- To produce graduates who demonstrate ethical behavior and professional attitudes;
- To provide a quality program, which is assessed, evaluated, and revised as needed;
- To work cooperatively with area employers and program affiliates in efforts to produce well-trained graduates;
- To prepare students to take the certifying examination successfully;
- To provide graduates who will enrich the laboratories in which they are employed;
- To develop far-sighted leaders for the future;
- To provide a stimulating educational experience that encourages continuing education in both students and participating laboratory staff.

MLT Program Competencies

In developing the Moberly Area Community College (MACC) Medical Laboratory Technician program, the curriculum was designed with specific goals in mind. Upon successful completion of the program and initial employment, graduates should be able to demonstrate entrance-level competencies in the following major areas of professional practice:

- Collection, handling, preparation, and storage of biological specimens for laboratory analysis;
- Performance of technical analyses on body fluids, cells, products, and organisms;
- Recognition of factors that affect procedures and results and take appropriate action within predetermined limits;
- Ability to operate basic laboratory instrumentation;
- Performance of quality control measures on instrumentation and technical analyses;
- Recognition of and adherence to clinical laboratory safety policies;
- Ability to troubleshoot instrumentation and technical analyses;
- Ability to perform preventative and corrective maintenance on basic laboratory equipment and instrumentation;
- Ability to recognize when to refer instrumentation problems to the appropriate sources;
- Demonstration of professional conduct with patients and health care workers both within and outside the laboratory;
- Demonstration of effective interpersonal communication skills;
- Demonstration of knowledge of the relationship of laboratory findings with common diseases processes;

- Demonstration of knowledge of reporting patient results using a laboratory computer information system;
- Recognition of the need for continuing education in professional practice and action on that recognition.

Entrance-level competencies will be acquired in the following coursework through didactic presentation and laboratory or clinical experience. The program coursework is designed to show student progression of knowledge and skill.

MLT 150 Laboratory Methods and Management (with laboratory)
MLT 210 Immunology (with clinicals)
MLT 220 Clinical Chemistry (with clinicals)
MLT 230 Urinalyis and Body Fluids (with clinicals)
MLT 250 Hematology (with clinicals)
MLT 260 Phlebotomy (with clinicals)
MLT 270 Immunohematology (with clinicals)
MLT 280 Clinical Microbiology (with clinicals)
MLT 290 Parasitology, Mycology, Virology
MLT 291 Clinical Hematology Practicum
MLT 292 Clinical Chemistry Practicum
MLT 293 Clinical Microbiology Practicum
MLT 294 Immunohematology Practicum

Phlebotomy: MLT 260

Syllabus – Lecture Objectives
Skills Checklist

- Collection and handling
- Patient services, such as communication and privacy
- Safety
- Specimen quality issues
- Sources of error

Hematology: MLT 250 and MLT 291

Syllabus - Lecture Objectives
Skills Checklist

- Specimen collection and handling
- Instrumentation, methodology, physiologic theory
- Disease states
- Correlation of test results
- Quality control
- Safety
- Reporting results

Hemostasis: MLT 250 and MLT 291

Syllabus - Lecture Objectives
Skills Checklist

- Specimen collection and handling
- Instrumentation, methodology, physiologic theory
- Disease states
- Quality control
- Correlation of test results
- Reporting results

Microbiology: MLT 280 and MLT 293

Syllabus - Lecture Objectives
Skills Checklist

- Specimen collection, handling, preparation, and storage
- Staining, media and incubation requirements
- Morphology, biochemical and/or serological reactions
- Evaluation and interpretation of cultures and identification of organisms
- Principles of methods
- Disease states and correlation of patient information
- Antibiotic patterns
- Instrumentation
- Quality control
- Safety
- Reporting results

Immunology: MLT 210

Syllabus - Lecture Objectives
Skills Checklist

- Specimen collection and handling
- Immunologic and physiologic theory
- Principles of methods
- Disease manifestations and clinical correlations
- Quality control
- Instrumentation
- Reporting results

Immunohematology: MLT 270 and MLT 294

Syllabus - Lecture Objectives
Skills Checklist

- Patient and donor collection, handling, storage, and preparation
- Principles of methods and resolution of problems
- Immunologic genetic theory
- Disease manifestations and clinical correlations
- Quality control and problem solving
- Reporting results

Clinical Chemistry: MLT 220 and MLT 292

Syllabus - Lecture Objectives
Skills Checklist

- Specimen collection and handling
- Physiologic theory
- Principles of methods
- Disease manifestations and clinical correlations
- Instrumentation, theory and troubleshooting
- Quality control
- Safety
- Reporting results

Urinalysis and Body Fluids: MLT 230

Syllabus - Lecture Objectives
Skills Checklist

- Specimen collection, handling, storage, and preparation
- Physiologic theory
- Principles of methods
- Disease manifestations and clinical correlations
- Quality control and problem solving
- Safety
- Reporting results

Parasitology/Mycology/Virology: MLT 290

Syllabus - Lecture Objectives

- Specimen collection, handling, storage, and preparation
- Principles of methods
- Quality control
- Organism characteristics and disease manifestations
- Safety

Professional Responsibility: MLT 150 and all other MLT coursework

All Skills Checklists include Affective Objectives. At Orientation, MLT students review the MLT Program Handbook that covers continuing education and professional conduct

- Continuing education
- Professional conduct
- Leadership
- Laboratory information system use and record keeping

ESSENTIAL REQUIREMENTS

Introduction

A graduate with an Associate of Applied Science degree from the Moberly Area Community College (MACC) Medical Laboratory Technician program is educated to enter the practice of laboratory medicine and qualified to take the accrediting exam from the American Society of Clinical Pathologists (ASCP). Education in laboratory medicine involves assimilation of knowledge, acquisition of skills, and development of judgment through handling patient specimens, manipulation of instrumentation, and working with patients, doctors, nurses, and other health care professionals. Medical laboratory technicians must be able to work independently and as a part of a team. They must be able to make appropriate decisions regarding patient results.

The Medical Laboratory Technician program's curriculum requires students to engage in diverse complex and specific experiences primarily in the laboratory but also with patients. Unique combinations of cognitive, affective, psychomotor, physical, and social abilities are required to perform these functions successfully. These abilities are necessary to ensure the health and safety of patients, fellow students, laboratory personnel, faculty, and other healthcare providers.

Policy

MACC has a vested interest in the welfare of patients served by graduates of the Medical Laboratory Technician program. The College also has a responsibility to its clinical affiliates, future employers, program instructors, and students enrolled in the program. Therefore, not only have academic standards been established but also non-academic essential requirements. These requirements, as distinguished from academic standards, refer to cognitive, physical, and behavioral abilities that students must have to acquire the knowledge and skills of the curriculum successfully. The standards must be met, with or without reasonable accommodation, in order for students to participate in the program. Discrimination is prohibited based on race, color, sex, national origin, age, disability, marital status, religion, or veteran status in compliance with the Americans with Disabilities Act (PL 101-336).

The essential abilities necessary to acquire or demonstrate competence in laboratory medicine and necessary for successful admission and continuance in the Medical Laboratory Technician Program include but are not limited to the following:

Motor Skills and Mobility

- Dexterity and fine motor skills to perform laboratory testing and specimen manipulation
- Physical ability to maneuver within the laboratory area to perform testing and the patient treatment area to collect specimens
- Sufficient touch discrimination to distinguish veins when performing venipunctures

Candidates should have sufficient motor function to move about the laboratory and the dexterity to manipulate equipment, laboratory supplies, biohazards, chemical hazards, and patient specimens. They must have the ability to operate instrumentation safely to avoid harm to self or others. Laboratory workers interpret data from computer screens and perform data input. The candidate must be able to perform phlebotomy; that is, moving from room to room or patient to patient, stooping or bending, to draw blood safely. The candidate must be able to lift, carry, push, and pull. The candidate must be able to move quickly and/or continuously as well as tolerate long periods of standing or sitting (laboratory workers spend approximately 75% of each day standing or walking). The candidate must be able to travel to clinical laboratory sites for practical experience. Candidates must be willing to work with blood, infectious organisms, and chemical reagents.

Sensory/Observation

- Visual ability to perform and interpret test results, and to read charts, graphs, instrument displays, and the printed word on paper or a computer monitor
- Visual ability to distinguish gradients of colors Note: Color blindness does not necessarily preclude admission to the program
- Tactile ability to perform laboratory tests using assorted devices

A candidate must be able to acquire the information presented in demonstrations and experiences in basic laboratory science. He or she must be able to discriminate subtle structure and consistency differences in specimens and cultures both macroscopically and microscopically. Additionally, he or she must be able to evaluate patient/client responses correctly; accurately read results or measurements on patient-related equipment; and hear monitor alarms, emergency signals, telephone interactions, and cries for help. The candidate must be able to tolerate odors and work in close and crowded areas.

Communication

- Effectively communicate in written and verbal form (this includes basic computer keyboarding)

The candidate must be able to process and communicate effectively in oral and written forms. The candidate must communicate clearly, effectively, and sensitively with other students, faculty, staff, patients, and other medical professionals. He or she must be able to follow oral and written instructions to perform laboratory test procedures correctly.

Cognitive

- Ability to master information presented in lectures, written material, and images
- Cognitive ability to assess data, make decisions based on data, and provide complete and accurate results on laboratory testing for quality patient care

The Medical Laboratory Technician program candidate must be able to measure, mathematically calculate, reason, analyze, integrate, and synthesize information. The candidate must be able to read and comprehend technical and professional materials. He or she must be able to evaluate information and engage in critical thinking in the classroom and clinical setting.

Behavioral/Emotional

- Emotional stability in potentially stressful circumstances
- Behavioral restraint, emotional maturity, and sensitivity to others

The candidate must possess the emotional health required to use his or her intellect in exercising appropriate judgment and prompt completion of all responsibilities. The candidate must have the emotional stability to provide professional and technical services under stressful conditions such as emergency demands and distracting environments. The candidate must be a team member, honest, compassionate, ethical, responsible, and able to manage time in order to complete technical procedures within a reasonable time frame.

Professional Conduct

- Professionalism and ethical conduct

Candidates must recognize the importance of operating in a moral, ethical way in the clinical laboratory and the necessity of abiding by high standards of practice. Candidates must recognize the need for confidentiality.
These standards identify the requirements for admission, retention, and graduation from the program. It is the responsibility of the student with disabilities to request those accommodations that he or she feels are reasonable and needed to execute the essential functions described.

References:
Fritsma, G., Fiorella, B., Murphy, M. (1996). Essential Requirements for Clinical Laboratory Science." Clinical Laboratory Science, 9(1), p. 40-43.

American Society of Clinical Laboratory Scientists. (2004). Body of Knowledge, Clinical Laboratory Scientist. Bethesda, MD: ASCLS.

American Society of Clinical Laboratory Scientists. (2004). Entry Level Curriculum, Clinical Laboratory Scientist. Bethesda, MD: ASCLS.

RECEIPT AND ACKNOWLEDGMENT

ESSENTIAL QUALIFICATIONS

The undersigned applicant to the Moberly Area Community College Medical Laboratory Technician Program hereby acknowledges receiving, reading, and understanding this essential functions document.
The applicant understands that completion of the MACC Medical Laboratory Technician program does not mean that the American Society of Clinical Pathologists will issue the applicant a certificate.

SIGNATURE OF APPLICANT

Date

STATE OF_____

COUNTY OF_____
On this_____day of _____, 20___, before me, _____, Notary Public in and for said state, personally appeared,_____, known to me to be the person who executed the within instrument and acknowledged to me that _____ executed the same for the purposes therein stated.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Notary Public

MEDICAL LABORATORY TECHNICIAN PROGRAM CODE OF ETHICS

Medical professionals and their patients depend on technical skills, knowledge, honesty, and integrity from everyone on the health care team. Those engaged in laboratory medicine add to those attributes careful attention to detail, accuracy, and precision.

Producing reliable and quality test results is the province of the clinical laboratory. Educators are responsible for producing ethical, well-trained graduates. Therefore, in addition to the technical curriculum, the Medical Laboratory Technician program emphasizes professional ethics and attitudes.

Unethical practices can result in legal action and/or endangering patients. Clinical laboratories cannot tolerate dishonesty and unsafe or unethical behavior. The Medical Laboratory Technician (MLT) program will dismiss students who demonstrate such behaviors as plagiarizing, falsifying lab results, destroying/misusing equipment, and failing to adhere to safety policies. The program adheres to the Code of Ethics of the American Society for Clinical Pathology (ASCP). It publishes principles and standards for clinical laboratory professionals.

When students acknowledge that they have read the MLT Student Handbook, they also pledge the following:

- To treat patients, instructors, and colleagues with respect and thoughtfulness;
- To perform laboratory work in an accurate and responsible manner;
- To use laboratory resources properly;
- To abide by laws and regulations and disclose illegal or improper behavior to the appropriate authorities;
- To study the Medical Laboratory Technician body of knowledge conscientiously throughout their training.

Continuing to update knowledge and skills throughout a career in laboratory medicine is ethical behavior. Program instructors will convey this concept of responsibility.

Evaluation of Professional Attitudes and Behaviors: One of the Medical Laboratory Technician program goals is to train ethical, responsible laboratory professionals. To guide students toward this end, the program has developed an evaluation tool, the Professional Behaviors Evaluation, for use in clinical rotations. It conveys the program's dedication to attributes such as honesty; integrity; persistence; initiative; dependability; flexibility; patience; respect for others; and ability to follow directions and work under stress; accept criticism; and be organized. Other attributes include compliance with safety regulations and quality assurance practices and skill in communicating, prioritizing, and making valid judgment calls.
The Professional Behaviors Evaluation that is completed by affiliate site instructors includes the following sections with behaviors and attitudes they observed students demonstrating:

SKILLS

1. Performed laboratory tests with good technique; that is, carefully and with attention to detail and quality.
2. Maintained and operated equipment and instrumentation reliably; generated quality results.
3. Completed tasks in a timely way and generated reliable results.
    - Used good technique in performing laboratory tests (sterile technique, prevented aerosols, minimal damage, etc.);
    - Consistently performed tests with precision, accuracy, and quality;
    - Maintained adequate and steady level of consistency of work throughout rotation, or if problems did arise, showed definite improvement before finishing department;
    - Able to correlate results with other lab results when possible (i.e. CSF glucose: low – gram stain for bacteria);
    - Readily learned to use equipment or instruments and developed good working knowledge of same;
    - Within ability made adjustments and repairs when appropriate;
    - Left equipment or instruments clean and in good working order after use;
    - Completed tasks in a reasonable amount of time and not distracted while working (did not readily allow such things as conversation, other students, etc. to distract);
    - Organized for priority and efficiency. Could perform multiple procedures simultaneously.

DEPENDABILITY

1. Followed written procedures.
2. Demonstrated responsibility toward patients and colleagues.
3. Maintained confidentiality.
4. Accepted instruction and followed procedures.

    - AFTER THE FIRST TIME was able to follow written procedures with relative ease, accuracy, and a minimum of help;
    - Arrived at the laboratory on time, began work promptly, and returned from lunch and break punctually;
    - Notified instructor well in advance of an expected absence;
    - Accepted instructions from instructors and followed them without further reminder and a minimum of supervision;
    - Correctly followed verbal technical procedures as stated by instructor;
    - Consulted instructor about unusual problems and/or situations (technical and/or administrative) when necessary;
    - Used proper quality control measures;
    - Adhered strictly to established procedures;
    - Treated laboratory results and issues confidentially;
    - Acted deliberately and systematically when under pressure; projected confidence, and did not act defensively, impulsively, or aggressively. Handled interruptions skillfully;

- Admitted mistakes when a misunderstanding or mishandling of a situation occurred;
- Learned from mistakes and accepted justified criticism gracefully as a learning experience;
- Abided by established student and administrative policies;
- Prepared reagents as needed.

INITIATIVE

1. Demonstrated initiative and resourcefulness.
2. Willing to learn more than the minimum.

- Looked for things to do and did them without being asked. This included technical work; duties necessary to maintain a clean, orderly working area; and reading and studying while not performing technical duties.
- Possessed skills to try new tests or make minor instrument repairs according to established strategies.
- Constructively suggested modifications of education and/or supervisory policies if occasion arose.
- Demonstrated perseverance. Did not become unduly upset if test or procedure failed but was willing to learn why and made further attempts if occasion allowed.
- Actively and voluntarily sought further information. Asked questions which indicated interest in deeper or broader aspects. Assumed responsibility for own learning. Read unassigned material to further knowledge.
- Exhibited thorough understanding of theory and application of a subject at the MLT level.

INTERPERSONAL RELATIONS AND COMMUNICATIONS

- Demonstrated both verbal and nonverbal expressions of cooperation and respect
- with patients, peers, supervisors, and teachers.
- Exhibited a neat, clean, appropriately dressed, and professional appearance;
- Expressed self well, verbally and non-verbally. Reports were accurate and legible;
- Maintained technical competency and emotional stability in times of tension or stress;
- Dealt with patients in a professional, cooperative, empathetic manner;
- Effectively communicated instructions, questions, etc. to fellow workers and patients so that he/she was easily understood.

Phlebotomy Program Competencies

In developing the Moberly Area Community College (MACC) Phlebotomy program, the curriculum was designed with specific goals in mind. Upon successful completion of the program and initial employment, graduates should be able to demonstrate entrance-level competencies in the following major areas of professional practice:

- Collection, handling, preparation, and storage of biological specimens for laboratory analysis;
- Recognition of factors that affect procedures and results and take appropriate action within predetermined limits;
- Ability to operate basic POCT instrumentation;
- Performance of quality control measures on instrumentation and technical analyses;
- Recognition of and adherence to clinical laboratory safety policies;
- Ability to recognize when to refer problems to the appropriate sources;
- Demonstration of professional conduct with patients and health care workers both within and outside the laboratory;
- Demonstration of effective interpersonal communication skills;
- Recognition of the need for continuing education in professional practice and action on that recognition.

Entrance-level competencies will be acquired in the following coursework through didactic presentation and laboratory or clinical experience. The program coursework is designed to show student progression of knowledge and skill.

Phlebotomy: MLT 260

Syllabus – Lecture Objectives
Skills Checklist

- Collection and handling
- Patient services, such as communication and privacy
- Safety
- Specimen quality issues
- Sources of error

Advanced Phlebotomy: MLT 261

Syllabus – Lecture Objectives
Skills Checklist

- Collection and handling
- Patient services, such as communication and privacy
- Safety
- Specimen quality issues
- Sources of error

MEDICAL LABORATORY TECHNICIAN AND PHLEBOTOMY PROGRAMS ADVISORY COMMITTEE

The Vice President for Instruction, the Dean of Career and Technical Education, the Director of Allied Health, the Medical Laboratory Technician (MLT) MLT Program Coordinator, and the MLT faculty ultimately determine the policies, program content, and direction of the MLT program. They receive input, however, from an advisory committee composed of interested area laboratory professionals, representatives of clinical affiliates, and business leaders who meet with them once each full academic semester to advise on current laboratory practices, program content relevancy, and program effectiveness. Members of the advisory committee serve for three years, terms being staggered to ensure one-third turnover. Officers are elected once a year. Following is the list of the MLT advisory committee members.

Advanced Technology Center	Mexico, Missouri
Caroline Groves	Director of Advanced Technology Center

Audrain Medical Center	Mexico, Missouri
David Buhr	(retired) Director of Business Development
Jolene Harrison	Laboratory Supervisor
Paula Smith	Laboratory Manager

Boone Hospital Center	Columbia, Missouri
Rebecca Hennessy	Laboratory Operations Specialist
Peggy Washer	Clinical Technical Specialist/Educational Coordinator

Boyce and Bynum Pathology Laboratories	Columbia, Missouri
Diana Inman	PSC Manager/Safety Officer
Cathy Thornton	Director of Compliance

Callaway Community Hospital	Fulton, Missouri
Terry Herold	Laboratory Director

Capital Regional Medical Center	Jefferson City, Missouri
Dottie Bayne	Laboratory Manager

Hannibal Clinic	Hannibal, Missouri
Kena Hirner	Ancillary Services Manager

Hannibal Regional Hospital	Hannibal, Missouri
Barbara Parkhill	Laboratory Director

Harry S. Truman Veterans Administration Hospital	Columbia, Missouri
Patty Komula	Laboratory Manager

Moberly Area Community College	Moberly, Missouri
Jo Fey	Dean of Career and Technical Education
Sue Brouk	Director of Career and Technical Programs
Ruth J. Jones	Director of Nursing and Allied Health Programs

Moberly Regional Medical Center	Moberly, Missouri
Anita Smith	Laboratory Director

Pike County Memorial Hospital	Louisiana, Missouri
Debbie Rothweiler	Laboratory Director

Samaritan Hospital	Macon, Missouri
Bernard Orman	CEO

ACCREDITATION STATUS

The Medical Laboratory Technician program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). Program evaluation information, including graduation, placement, and any certification pass rates, are available to NAACLS for purposes of monitoring accredited programs, following trends, and research.

National Accrediting Agency for Clinical Laboratory Sciences
5600 N. River Road Suite 720
Rosemont, IL 60018-5119
847.939.3597
773.714.8880

MLT COURSE SYLLABI AND PRACTICUM MANUALS

Syllabi for MLT courses are available each semester in the online portal for the course. Practicum manuals are distributed prior to start of clinical rotations. They are used as a basis for evaluating achievement in courses and include objectives that students must achieve to be successful in the courses. The faculty will outline expected levels of performance in each course at the start of the semester.

STUDENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Medical Laboratory Technician faculty encourages students to become members of professional organizations such as the American Society of Clinical Pathologists (ASCP) or the American Society of Clinical Laboratory Scientists (ASCLS). The benefits of belonging to these organizations include receiving monthly subscriptions to scientific journals, notification of continuing education, conferences, career opportunities, and networking. Membership for students in ASCP is complimentary. At this time membership for students in ASCLS is $25.00. Applications can be obtained online at www.ascp.org and www.ascls.org and are also distributed to all students at the beginning of the fall semester.

ACADEMIC ADVISEMENT CAREER AND PLACEMENT SERVICES

Academic advisement is available to all students in the Office of Student Services or with the program coordinator who is the listed advisor for all PreMLT and MLT students. Additionally, faculty members serve as academic advisers in their respective areas. Students wishing to explore career opportunities, conduct a job search, or access student support groups will find their needs met at Career and Placement Services (CAPS). The CAPS office is located in the Career Center on the main campus.

STUDENT GRIEVANCE PROCEDURE

The student grievance procedure shall be conducted according to the procedure approved by the MACC Board of Trustees and described in the MACC Student Handbook. The purpose of this procedure is to resolve in a fair and equitable manner misunderstandings, disagreements, and questions that might arise. Refer to the College website located at http://www.macc.edu/images/forms/StudentHandbook.pdf

JOB PLACEMENT

The College offers job placement assistance. MLT students receive instruction in resume writing, job application, and interview skills in MLT 150 Laboratory Methods and Management. In addition, a Job Placement Office provides students with instruction to enhance job-seeking skills and assists students in finding employment while attending college and/or upon completion of the program. In addition to College efforts, the MLT Program Coordinator shares with students, information about openings in area laboratory facilities.

Educational Program Description

Moberly Area Community College's Medical Laboratory Technician (MLT) program prepares the graduate to assume responsibility in various laboratory settings, medical or non-medical, clinical diagnostic or research, hospital or reference laboratories.

The MLT program culminates in an Associate of Applied Science degree. All potential students must take the prescribed general education classes, which ideally can be completed in two semesters. Medical Laboratory Technician courses may only be taken after students have successfully completed prerequisite courses. Completion of the MLT-specific courses will take two semesters and two summers.

Core classes in this program study human diseases and laboratory tests that identify them. Students learn to operate equipment in medical laboratories and perform a wide range of procedures. Didactic and clinical instruction emphasize proper specimen collection and handling, understanding test procedures, safety, quality control, acquisition of technical skills, and troubleshooting techniques. To successfully complete an MLT course, students must score ≥78% or "C" in both the didactic and clinical components.

When students have successfully completed the Medical Laboratory Technician program, they will be eligible to take the American Society for Clinical Pathology certification examination. Granting the degree is not contingent on passing the registry examination.

The curriculum includes the following:

- Orientation
- Training in phlebotomy
- Lecture (didactic) in various disciplines of laboratory science
- Practical training in the student laboratory
- Individual rotations through clinical departments of MACC affiliates
- Written and practical examinations throughout the curriculum

MEDICAL LABORATORY TECHNICIAN COURSEWORK

Course number	Course Title	Credit hours	Lecture hours/week	Laboratory or clinical hours	Semester	Total contact hours
MLT 150	Laboratory Methods and Management (with lab)	3	2	2 hours/week	Summer	64
MLT 210	Immunology (with clinicals)	2	1	64 hours or 8 (8-hour days)	Fall	80
MLT 250	Hematology (with clinicals)	5	3	128 hours or 16 (8-hour days)	Fall	176
MLT 260	Phlebotomy (with clinicals)	2	1	64 hours or 8 (8-hour days)	Fall/Spring	80
MLT 230	Urinalysis and Body Fluids (with clinicals)	2	1	64 hours or 8 (8-hour days)	Fall	80
MLT 220	Clinical Chemistry (with clinicals)	5	3	128 hours or 16 (8-hour days)	Spring	176
MLT 270	Immunohematology (with clinicals)	4	2	128 hours or 16 (8-hour days)	Spring	160
MLT 280	Clinical Microbiology (with clinicals)	5	3	128 hours or 16 (8-hour days)	Spring	176
MLT 290	Parasitology, Mycology, Virology	1	1	16 hours	Fall	16
MLT 291	Clinical Hematology Practicum	2	0	128 hours or 15 (8.5-hour days)	Fall	128
MLT 292	Clinical Chemistry Practicum	2	0	128 hours or 15 (8.5-hour days)	Summer	128
MLT 293	Clinical Microbiology Practicum	2	0	128 hours or 15 (8.5-hour days)	Summer	128
MLT 294	Immunohematology Practicum	2	0	128 hours or 15 (8.5-hour days)	Summer	128

ASSOCIATE OF APPLIED SCIENCE DEGREE

Degree requirements

Students earn an Associate of Applied Science Degree after completion of the Moberly Area Community College Medical Laboratory Technician program. The general education component of this A.A.S. degree includes courses from the following areas:

Communications	3-6 hrs.
Humanities	3 hrs.
Social and Behavioral Sciences	3 hrs.
Functions & Policies of American Govt (3) or Amer History to 1865 (3)	
Biological and Physical Science	3-4 hrs.
Mathematics	3 hrs.
Life Skills	2 hrs.
College Orientation (1) and Employment Seminar (1)*	
General Education Requirement	17-21 hrs.
MLT Core Requirements	59 hrs.
Directed Electives	Varies
TOTAL	70 hrs.

*MLT 150 includes curriculum for Employment Seminar. A separate course is not required.

The Dean of Career and Technical Education reviews this program annually and revisions are made as needed.

Students who transfer to a four-year institution should expect that institution to evaluate their coursework in terms of applicability to the requirements of the student's major field of baccalaureate study. Some AAS degrees are transferable through articulation agreements with other educational institutions.

Conditions for Graduations

To meet the requirements for graduation from MACC, a student must meet the requirements of the degree and the following:

1. Complete 21 of the last 30 hours applicable to the degree program in residence at Moberly Area Community College (these last 21 hours must be 100-level courses or higher), OR complete 3 semesters of attendance AND a minimum of 45 hours applicable to the degree program at Moberly Area Community College,
2. Have a total of 70 hours of credit,
3. Earn a grade of "C" or above in all required courses that are part of the MLT curriculum,
4. Submit an application for graduation,
5. Complete the CAAP or Work Keys assessment before or during the last semester of enrollment prior to completion of a degree at Moberly Area Community College,
6. Participate in graduation ceremonies (requests to be excused from commencement ceremonies will be reviewed by the Dean of Student Services), and
7. Pay in full all fees due to Moberly Area Community College.

MEDICAL LABORATORY TECHNICIAN – A.A.S DEGREE

Recommended Course Sequence

The Medical Laboratory Technician courses include a theoretical component plus experience in clinical situations such as in hospital laboratories and private laboratories.

First semester

LAL 101	English I	3
MTH 140	College Algebra	3
BIO 205	Human Anatomy	4
PHY 121	General Chemistry I (with lab)	5
SKL 101	College Orientation	1
	Total	16

Second semester

BIO 206	Microbiology	4
BIO 209	Physiology (with lab)	4
BOE 171	Medical Terminology	3
	*Humanities Elective	3
	Total	14

*Introduction to Ethics recommended

Summer semester

MLT 150	Lab Methods and Management	3
PSC 105	*Functions and Policies of American Government	3
	Total	6

*or another course that meets Missouri Constitution requirement

Third semester

MLT 210	Immunology (with clinicals)	2
MLT 230	Urinalysis and Body Fluids (with clinicals)	2
MLT 250	Hematology (with clinicals)	5
MLT 260	Phlebotomy (with clinicals)	2
MLT 290	Parasitology, Mycology, Virology	1
MLT 291	Clinical Hematology Practicum	2
	Total	14

Fourth Semester

MLT 220	Clinical Chemistry (with clinicals)	5
MLT 270	Immunohematology (with clinicals)	4
MLT 280	Clinical Microbiology (with clinicals)	5
	Total	14

Summer Semester

MLT 292	Clinical Chemistry Practicum	2
MLT 293	Clinical Microbiology Practicum	2
MLT 294	Immunohematology Practicum	2
	Total	6
	TOTAL	70

POLICIES FOR THE MEDICAL LABORATORY TECHNICIAN PROGRAM

ADMISSION CRITERIA

Applicants must fulfill the following academic requirements to be considered for admission.

1. Complete all admission requirements for Moberly Area Community College.

2. Submit official transcripts from high school or GED to the Registrar in Student Services.

3. Submit official college or university transcripts to the Registrar in Student Services.

4. A composite ACT score of 19 OR COMPASS scores of 59 in writing, 74 in reading and 55 in algebra OR 12 hours of 2.5 GPA in the program prerequisite science and mathematics courses is required. These prerequisite courses include the following:

   MTH 140 College Algebra
   BIO 205 Anatomy
   PHY 121 General Chemistry I (with lab)
   BIO 206 Microbiology
   BIO 209 Physiology (with lab)

5. Students must have a "C" or above grades in all required courses which are part of the MLT curriculum.

6. Have a cumulative GPA of 2.5 from high school or college. College transcripts supersede high school transcript.

7. Complete, sign, and return the notarized Essential Qualifications form.

8. Submit three references using the forms supplied by the MLT program. The composite score of each must be no higher than 2.0. References may not be completed by a personal friend or relative.

9. Complete Physiology and Microbiology with a grade of C or better completed within the last five (5) years.

10. Submit to and pass a criminal background check.

11. A TOEFL score of 560 OR a grade of “C” in Freshman English OR an English sub score of 20 on the ACT is required of students for whom English is a second language.

Continuation in the program will be contingent upon completion of all general education courses prior to beginning MLT clinical coursework.

These are minimum application criteria for this program and do not guarantee admission. Students are selected for admission into the program annually. Qualified students will be admitted to the program until May 31 or until the class is full. Qualified applicants not admitted for the current academic year will be placed on a waiting list. If no position becomes available, these applicants must reapply for the next academic year. In the event of an unusual situation concerning an applicant, an Admission Committee will make the decision to admit or not. The Admission Committee will consist of the Director of Allied Health, the Dean of Career and Technical Education, a representative of the Advanced Technology Center, a Student Services representative or a science instructor, and the Program Coordinator.

Completed applications forms, official transcripts, and examination scores must be received in the office of the Coordinator for the Medical Laboratory Technician (MLT) program. Those students who meet the admission requirement will have scheduled conferences with the Coordinator of the program.

Moberly Area Community College does not discriminate on the basis of race, color, national origin, sex, disability, age, and marital or parental status in admissions, programs and activities, and employment.

Inquiries concerning Section 504 of the Rehabilitation Act of 1973, which guarantees access to education regardless of disability, should be directed to:

Megan Halloran
Office of Access and ADA Services
101 College Avenue
Moberly, MO 65270
660-263-4110 ext. 11240

All other inquiries concerning nondiscrimination, including equal opportunity and Title IX, should be directed to one of the following people:

Dr. Jackie Fischer
Office of Academic Affairs
101 College Avenue
Moberly, MO 65270
660-263-4110 ext. 11236

Patricia Twaddle
Career and Placement Services
101 College Avenue
Moberly, MO 65270
660-263-4110 ext. 11232

ADMISSION PROCEDURE

Obtain an application packet from the MLT Program Coordinator. The packet contains all the necessary paperwork to apply for the Medical Laboratory Technician program. The completed paperwork is due March 31. The program begins in the summer semester.

Kristine Hayes, Program Coordinator
Medical Laboratory Technician Program
Advanced Technology Center
2900 Doreli Lane
Mexico, Missouri 65265
573-582-0817
E-mail: kristinh@macc.edu

The Coordinator collects applicant paperwork in a folder. By March 31, the folder must include the following:

- Completed applications
- ACT OR COMPASS scores on file, if applicable
- All transcripts
- Courses planned or in progress
- Three references
- Background check
- A signed Essential Qualifications statement
- A signed Release of Information form

Candidates should direct official transcripts to the Registrar's Office of Moberly Area Community College and authorize release to the Medical Laboratory Technician Program Coordinator. Prospective students should submit the completed application and the courses planned or in progress. They must submit to and pass a background check. The form for the latter is in the application packet.

Three references are required. Candidates should use the form provided by the program and select as references instructors and employers, not relatives and friends. One reference MUST come from an instructor and on from an employer/supervisor. If only volunteer experience is available then a volunteer coordinator will be sufficient replacement for employer/supervisor. The program uses references to assess the candidate's ability to work with others, personal integrity, honesty, initiative, and work ethic. References send the completed form directly to the Program Coordinator, but the candidate may also hand carry a reference in a sealed envelope.

After admission to the program and before the first day of clinical coursework begins, applicants must submit to the Program Coordinator, a current medical exam (the form is available from the Program Coordinator) to verify that they are capable of meeting the essential requirements (cognitive, physical, and behavioral abilities) that are necessary for satisfactory completion of all aspects of the curriculum. Candidates must also provide documentation of having current drug testing, TB test, and appropriate immunizations. Students are responsible for the cost of the medical exam, TB test, immunizations, drug testing, and background checks.

PROGRAM COSTS

Moberly Area residents pay no tuition to attend the Moberly Area Community College. They do pay fees, however, plus housing and transportation costs. Tuition and fees for in-state and out-of-state students are published in the college catalog.

MACC District Residents		Other Missouri residents		Non-Missouri residents	
Tuition	$99.00	Tuition	$142.00	Tuition	$194.00

MLT coursework includes a $30.00/credit hour laboratory fee.

Costs are subject to change without notice by the Moberly Area Community College Board of Trustees.

In addition to tuition and fees, prospective students should anticipate the following expenses:

Books and CDs
Criminal background checks
Name pin
Drug screens
Travel to and from clinical sites
Lab coats and/or scrubs
On-line Registry fee

REFUND POLICY

Tuition and fees with the exception of the registration fee may be refunded according to the following policy based on a 16-week semester. Refunds for other course offerings will be prorated accordingly. Please refer to the MACC Student Policy Manual for more complete explanation of the refund policy.

1. A student who has officially withdrawn through the Office of the Dean of Student Services within the first week of classes for regular fall and spring 16-week semesters is entitled to a 100% refund.
2. A student who has officially withdrawn through the Office of the Dean of Student Services within the second week of classes for regular fall and spring 16-week semesters is entitled to a 50% refund.
3. A student who withdraws after the first two weeks of classes for regular fall and spring 16-week semesters receives no refund.
4. Students unable to begin classes after they have enrolled MUST officially withdraw from class to be eligible for a reduction of tuition and fees charged.
5. Refunds will not be given for business and industry courses and adult and community education courses.
6. In the event of extreme extenuating circumstances and with proper written documentation, a partial or total refund may be granted to a student beyond the standard refund terms. Such refund requests will be reviewed by the President of MACC and a determination made on a case-by-case basis.

FINANCIAL AID

Financial assistance is available in the form of grants, loans, work/study, and scholarships, or a combination of these. Financial aid refers to all forms of financial assistance granted to the student through the institution.

Most types of financial aid are awarded on an academic year basis; students need to apply for financial aid annually.

Students applying for financial aid should complete the Free Application for Federal Student Aid (FAFSA). Applications are available at Moberly Area Community College Financial Aid Office and on-line.

Other possible financial resources are the following:

- GAMM
- Pell Grants
- Veteran's Benefits
- Vocational Rehabilitation
- Robert T. Stafford Student Loan
- College Work Study Program (CWSP)
- Work Investment Act (WIA)

MALPRACTICE INSURANCE

Moberly Area Community College's general insurance policy provides professional liability insurance at no charge, and it is limited to coverage as specified in the insurance policy. In the event the costs of this coverage were to increase, or another college insurance provider used, the student may be required to reimburse the college for any increased premiums. Coverage does not preclude a student from obtaining additional coverage if desired.

This insurance only provides coverage for the student while performing in the student role. Clinical sites may provide liability coverage for student clinical activities.

CLASSROOM ATTENDANCE

Students are expected to prepare for and attend all classes and clinical practice. Regular attendance improves probability for success in the program. Habitual tardiness and frequent absences are disruptive to the classroom and cause an unsafe environment in the student laboratory. Instructors carefully plan learning experiences, so it is important as a matter of courtesy and fairness to the class that all individuals be present. Students absent for reasons beyond their control, such as verified personal illness or family illness and/or death, can make up class work. If a student misses so many classes due to extenuating circumstances that the instructor feels the student cannot catch up, the MLT Program Coordinator will send a written report to the Director of Allied Health.

Any student who misses two consecutive weeks of class during a regular sixteen-week semester or the equivalent proportion of class time during a shorter session will be dropped from the class by the instructor unless acceptable justification is supplied. Additionally, any student who misses more than one-fourth of the entire number of in-seat class meetings in a regular 16-week semester or the equivalent proportion of class time during a shorter session, may be dropped from that class by the instructor if, in the opinion of the instructor, the student does not have reasonable opportunity to succeed in the class. A student's attendance rate will be calculated based upon the first day of the semester (not the student's date of enrollment in the course.
Student attendance must be defined in a different manner for online, hybrid, and virtual courses. Student attendance in these courses is defined as active participation in the course. Online, hybrid, and virtual courses will, at a minimum, have weekly mechanisms for student participation, such as any or all of the following methods:
a. Completion of quizzes or exams
b. Submission of assignments
c. Participation in threaded discussions
d. Communication with the instructor

A student who does not participate in an online, hybrid, or virtual course for two consecutive weeks will be dropped by the instructor unless acceptable justification is supplied. As with ground courses, a student's attendance rate in online courses will also be calculated based upon the first day of the semester. If a student does not demonstrate active participation in the online course within the first two weeks (or the equivalent proportion of class time during a short session), the student will be dropped as "never attended." Simply logging into an online class does not constitute active participation.

Students should be aware that their dropping a course and their last date of attendance in the course may impact their financial aid.

MLT CLINICAL PRACTICUM

Most of the Medical Laboratory Technician coursework includes lecture and student laboratory or clinical components. For MLT 210 Immunology, MLT 220 Clinical Chemistry, MLT 230 Urinalysis and Body Fluids, MLT 250 Hematology, MLT 260 Phlebotomy, MLT 270 Immunohematology, MLT 280 Clinical Microbiology, students will attend lectures each week and be scheduled for student laboratory or clinical experience in hospital or private laboratories. Students will spend the last three weeks of the fall semester in MLT 291 Clinical Hematology Practicum. The last semester of the MLT program consists of practicum blocks, MLT 292 Clinical Chemistry Practicum, MLT 293 Clinical Microbiology Practicum and MLT 294 Immunohematology Practicum.

The following facilities have contracted with Moberly Area Community College's Medical Laboratory Technician program to provide training:

- Audrain Medical Center
- Boone Hospital Center
- Bothwell Regional Medical Center
- Callaway Community Hospital
- Capital Region Medical Center
- Fitzgibbon Hospital
- Hannibal Clinic
- Hannibal Regional Hospital
- Harry S. Truman VA Hospital
- Hermann Area District Hospital
- Lincoln County Medical Center
- Moberly Regional Medical Center
- Northeast Regional Medical Center
- Pershing Memorial Hospital
- Samaritan Hospital
- University of Missouri Women's and Children's Hospital

The program is grateful for the support of these area medical facilities that have elected to affiliate with MACC as partners in this venture. Each laboratory uses up-to-date equipment and offers a wide range of tests. Their experienced staff donates employee time, supplies, and patient specimens to help educate new laboratory professionals. No site is identical, but each offers comparable experiences. Both the program and its affiliates expect students to reach entry-level competency of analytical testing and maintain proficiency by periodic repetition. Students will be supervised at all times and will not replace qualified staff.

MLT program officials monitor student activities and progress at the clinical sites. They will talk to students on site and consult with supervisors and preceptors throughout the students' experience. The clinical training period should be a positive and enriching experience for both students and instructors. It is also a difficult time for both parties but rewarding. Although MLT program officials desire all to go well, they realize this may not be realistic. Students will be dismissed for unacceptable behavior or performance, poor attendance, or any other reasonable cause.

Placement: The MLT coordinator anticipates having enough clinical sites in which to place students for training. That said, program officials admit that unforeseen situations such as a shortage of clinical sites could occur. In this circumstance, students will be ranked according to GPA in their MLT courses and assigned to clinical sites. Students who were not placed will be assigned to a clinical site as soon as one becomes available. The program will make every attempt to avoid this kind of situation as it may delay graduation and eligibility to take the ASCP registry examination.

Student assignment to clinical sites will be determined by a variety of factors such as student and affiliate needs; previous laboratory experience; and student knowledge (GPA), skills, and attitudes. Program officials will make every attempt to place students where they will be successful and at the proper times in their academic semesters.

The clinical faculty of the program's affiliates has the right to review student academic records and professional attitudes evaluations. They have the right to refuse a student's placement in their clinical facility based on these records.

A prospective student who has been employed in one or more of the MLT program's affiliates, and is not eligible for rehire as an employee, may not be acceptable to the affiliate(s) as an MLT trainee. In this case, the prospective student will request documentation from the affiliate stating the affiliate's position on that student's on-site training. If the affiliate responds negatively, the MLT Program Coordinator will attempt to find an alternate training site. A student who has a previous employer issue or for whom a training site cannot be found may be dropped from the program because the clinical component cannot be completed.

Clinical Policies and Procedures: Students must comply with all the policies and procedures of the facilities where they are training, and it is their responsibility to become familiar with them. The MLT coordinator and the affiliate will coordinate efforts to provide this information. Failure to comply with the policies and procedures of the affiliates or failure to respect the authority of the staff will result in removal of the student from the site and potentially the program of study. Phlebotomy students who fail to make adequate progress in the clinical setting in MLT 260 Basic Phlebotomy cannot begin MLT 261 Advanced Phlebotomy and will be withdrawn from that course. Adequate progress is defined as at least 50% of clinical time completed for MLT 260 and a written and agreed upon schedule to complete clinical hours for both MLT 260 and MLT 261 by the end of the semester.

Transportation: Students provide their own transportation to the clinical sites. The MLT Program Coordinator or instructors may arrange for transportation to scheduled continuing education programs, special lectures, field trips, workshops, or seminars.

Attendance: For all MLT clinical practicum blocks, daily starting and ending times will vary according to the arrangements made by the program officials and the affiliates. Hours for the clinical component of the MLT coursework will be arranged, and students will be given adequate notice. Hours for the summer clinical practicum blocks are more regimented; students will spend 8.5 hours per day per week on site for nine (9) weeks. The student is allowed two 15-minute breaks and a ½ hour lunch break. No weekend shifts or night shifts are required. Phlebotomy students will submit a written schedule of dates and times for their clinical training to the MLT program coordinator and the clinical site. Any deviation from this schedule will require advance notice to both the clinical supervisor as well as the MLT coordinator.

Both program officials and affiliates stress that acquiring technical skills and knowledge depend on student attendance. Every hour at the clinical site is important. Students have a great deal to learn in the relatively small amount of time spent at the clinical site. Staff on-site will have activities planned and must fit in teaching with their patient work. Having to schedule make-up hours for students who missed clinical time applies undue pressure on clinical instructors. Additionally, an absent student will miss seeing rarely performed laboratory tests. For these reasons, absence of no more than 20% of the clinical hours will be allowed.

Students are expected to prepare for the clinical experience by reviewing principles and procedures, self-assessment materials, slide series, videos, PC programs, and articles made available by the clinical sites. They also should attend any available continuing education programs while they are on site.
Under no circumstances is a student granted time off during the nine-week practicum blocks. Students should schedule personal business, holidays, job interviews, and medical or dental appointments during time when they are not in lecture or expected at clinical sites. That said, program officials recognize that unavoidable situations arise; therefore, students should make arrangements with the instructors involved and notify the MLT Program Coordinator. If a student is ill or will be more than fifteen minutes late, he or she should notify the clinical instructor. The student is responsible for making up missed work. It is up to the clinical instructor to schedule any make up work.

When a student misses twenty percent (20%) of clinical practicum and the instructors believe that students cannot complete the work within the scheduled time, a clinical grade of "Incomplete" will be issued until the clinical objectives/experiences have been successfully met. The student will complete the clinical practicum at his or her own expense. A letter to the Director of Allied Health will outline the extent of clinical absences and the schedule for clinical completion as agreed upon by both student and instructor. Upon approval by the Director of Allied Health, the student and instructor will implement the make-up clinical plan and provide documentation of completion to the Director.

Non-work Related Activities:

When students are training at clinical sites, they should confine non-work related activities to the staff lounge or break room.
Students may not play games at clinical sites.
It is inappropriate to show visitors around the laboratory without permission of the laboratory manager.
Students should not visit or chat with other students during training hours. This is distracting and wastes clinical training time.
Students should not use cellular or electronic devices at clinical sites unless for a documented need or it is an emergency.

DRESS CODE

In the best interests of the profession, clinical sites, and student safety, MLT students will adhere to the following dress code:

1. Appear neat, clean, and well groomed.
2. Comply with the dress code of their assigned clinical sites.
3. Wear a clean, pressed white lab coat in the student laboratory and where necessary at the clinical sites.
4. Wear clean shoes in good condition with closed toes and heels. Cloth or canvas athletic shoes are not acceptable.
5. Wear no perfume. Wear no excessive jewelry such as dangling earrings, necklaces and bracelets. Have no visible body piercing except pierced ears.

6. Wear name badge at the clinical site.
7. Wear appropriate foundation garments.
8. Dress in professional attire. No denim is allowed to be worn at the clinical sites.
9. Hair should be clean and neatly styled, long hair tied back.

If students do not comply with the assigned facility's dress code, policies, and procedures, the college is not obligated to provide alternate learning experiences.

CLINICAL CANCELLATIONS

In the event of inclement weather, illness, or other circumstances, the MLT Program Coordinator or clinical instructors in consultation with the Director of Allied Health may cancel a clinical day. Program officials will attempt to notify the students in a timely manner. The plan for make-up clinicals will be made jointly.

STUDENT HEALTH INSURANCE

MLT students have a special responsibility to follow good health practices for their own protection as well as that of patients they encounter and the public. This program recommends that all MLT students carry health insurance. Two program affiliate sites require student trainees to carry health insurance. All affiliate contracts address the issue of protocol to follow in the event of student injury or illness.
Should a medical emergency arise at the Advanced Technology Center, the College will call upon external resources, and any cost for it will be borne by the student. The faculty has adopted the following procedures to maintain and promote good health practices among MLT students.

IMMUNIZATION AND INFECTION CONTROL POLICIES

All students must provide the MLT Program Coordinator with documentation of a physical examination (the MLT Program Coordinator provides a form) and the following immunizations before clinical rotations begin:

1. All three doses of "Hepatitis B" vaccine or documentation of having begun the series;
2. Two MMR immunizations for students born in 1957 or later, or provide documentation of having had one or more of the diseases;
3. Positive immune varicella titer or an immunization;
4. DPT inoculation series;
5. TB test or chest x-ray if a positive reaction has been documented.
6. Influenza vaccine

A student who fails to comply with health program requirements will be withdrawn from the program. Entry into clinical sites is prohibited unless the program has the required health and immunization record. Clinical agreements with clinical facilities state that students must have proof of immunizations and absence of tuberculosis.

Program officials will instruct students in the prevention of HIV transmission prior to any clinical rotation. (Refer to Appendix 1).

BACKGROUND CHECKS AND DRUG SCREENING

Clinical facilities may request criminal background checks and/or drug screens for MLT students doing rotations in their facilities. The student will bear the cost of these diagnostic tools and must pass the screening prior to being allowed in the clinical area. For positive criminal background checks and urine drug screens, documentation will be submitted to the clinical sites stating the student's name and what the current issue is at the beginning of each semester. A letter will be written and a copy provided to the student notifying him/her of the positive results. If any of the clinical sites deny the student clinical privileges the student will also be notified. Note that clinical facilities who have a reasonable and articulated belief that a student is using or in possession of drugs or controlled substances may request random drug testing. Students cannot rotate in said facilities if they refuse to comply with the facility's request. Other disciplinary action may ensue, and the Director of Allied Health and the Dean of Career and Technical Education will review this information.

Moberly Area Community College requires a criminal background investigation on prospective and admitted students as required in Sections 610.120, 43.530 and 660.317 RsMo., HB1362 (Appendix 6). MACC will also make an inquiry to the Department of Social Services: Division of Aging to investigate whether the student is listed on the "Employee Disqualification List" as required in Section 660.315 RsMo. MACC performs student background investigations to insure student eligibility to participate in clinical experiences within the MLT curriculum. Students will also complete a form to allow release of background information and drug screen test results.

EMPLOYMENT

Students may work part-time in the clinical sites while enrolled in the MLT program but employment must not interfere with regular instructional time or with the maintenance of satisfactory grades. Students may not work for salary during regular instructional hours. Should a student fail to maintain satisfactory grades while employed part-time in a clinical site, the MLT Program Coordinator may recommend that such employment be reduced or terminated.

EVALUATION

Evaluation is an ongoing process included in all areas of the MLT program. It assists the student and instructors in identifying student growth. A student should view the evaluation process as a means of continually improving his or her clinical skills. Examinations are given throughout the semester and a comprehensive final examination is given during the final week of the semester. Instructors give feedback on the exam as quickly as possible in order to clarify responses and assist the student in using the exam as a positive learning experience. If desired, an individual may review the final exam by requesting to do so with the instructor.

STUDENT-INSTRUCTOR CONFERENCES

MLT program instructors encourage conferences when either the student or instructor feels they are necessary.
The purpose of the conference is to guide the student's progress in meeting the course objectives and to enable the student to gain insight into his or her needs related to clinical functioning.

STUDENT EVALUATION BY INSTRUCTORS

When students are rotating at a clinical site, department supervisors and a designated student contact person or preceptor share responsibility for the student. They review checklists and worksheets with students weekly during rotations. This enables students to assess their progress and success.

EVALUATION BY STUDENTS

At the end of their MLT clinical courses, students submit an evaluation of the course and their instructors. Program officials use these to improve the program. Evaluations are confidential and discussed with the instructors at the end of the semester. When possible, necessary recommendations will be implemented.

ACADEMIC STANDARDS

Students must have a "C" or above grades in all required courses which are part of the MLT curriculum.

In determining the final grade of a clinical course, all the important attributes of a student's performance are considered, including cognitive and non-cognitive attributes.

1. Students must maintain a grade of "C" or 78% in all course work in the MLT program.
2. In the lecture portion of the clinical course, the final grade is derived from student performance on examination(s) and/or assignments.

   unit exams averaged = 60%;
   final exam = 30%
   quizzes, term papers, etc. averaged = 10%
   TOTAL 100%
3. Students must earn no less than a 78% in the clinical laboratory experience; however, the grade is recorded as pass/fail, and students must pass in order to receive a final grade in the course. Evaluation in the clinical portion of the course is based on examinations, assignments, completion of checklists, and evaluation forms.
4. In the clinical practicum coursework, MLT 291, MLT 292, MLT 293, MLT 294, a letter grade will be assigned based on the following: Performance Evaluation: 70% (Passing is having met 78% of competencies) Laboratory assessments, write-ups, and/or activities and Comprehensive exam: 30%

5. The following grading scale applies to all programs within the Allied Health Division:

   100 – 92% = A
   83 – 91% = B
   78 – 82% = C
   66 – 77% = D
   65% and below = F

EXAMINATIONS

All examinations are carefully monitored. The proctor remains in the room to answer any questions. Students remain in the room until they turn in their examinations. Online exams have security measures built into them. Test reviews will not be made available until all students have taken the exam.
Students who miss a scheduled exam because of extenuating circumstances, may petition the MLT Program Coordinator and the course instructor for permission to take a make-up exam in the final week of the course or on a date convenient for the instructor.
Students who receive a grade below 78% on a test may remediate with the instructor/program coordinator and retake the exam. Exam retakes will score no more than a 78% (minimum passing score). All final exams are cumulative and are not available for retake.

LAB OR WRITTEN ASSIGNMENTS

To receive full credit for a lab or written assignments, students will submit all written, lab, or clinical assignments on the designated date and time. This is the established policy and it will be followed except in documented cases of extreme extenuating circumstances, which are warranted by but not limited to the following:

1. Illness of student or student's immediate family that requires hospitalization or emergency treatment
2. Death in the student's immediate family
3. Required court appearances by student

The MLT Program Coordinator and the instructor will evaluate any situation and determine if it meets the criteria of extreme extenuating circumstances. An instructor may opt to accept a late assignment but drop it a letter grade. Late work will ONLY be accepted up to one week after its original due date.

WRITTEN WORK

A student may redo one paper in an attempt to get 78%. In order to redo one paper an initial paper must have been submitted and a grade below 78% assigned. Resubmitted papers will receive no more than 78% and must be resubmitted within seven calendar days to the clinical instructor.

TRANSFER STUDENTS

The Registrar will evaluate and the Dean of Career and Technical Education validates transfer credits. Transfer students must meet the entrance requirements established for all MLT students, and they must have earned a grade of 78% or "C" in any transferring Medical Laboratory Technician coursework. Transfer students will be admitted to the MLT program on a space available basis. Please refer to the Admission Procedure in this Handbook

MEDICAL LABORATORY TECHNICIAN TRANSFER POLICY

Transfer from an accredited institution of a college level combined anatomy and physiology course of four or more credit hours with a lab component will meet the Moberly Area Community College Applied Associate of Science degree in Medical Laboratory Technician program anatomy requirement.

Transfer from an accredited institution of a college level combined Anatomy and Physiology course of eight or more credit hours with a lab component will meet the Moberly Area Community College Associate degree in Medical Laboratory Technician program's anatomy and physiology requirement.

If completed five years or more before the date of entry into the MACC Medical Laboratory Technician program, physiology and microbiology must be repeated. There is no time limit imposed on transferring acceptable anatomy credit. Students transferring any credit of more than five years are encouraged to assess their present knowledge base in that subject area and initiate a self-study review program if indicated.

APPEAL PROCEDURES

The MLT and Phlebotomy programs follow the college wide procedures as stated in the MACC Student Handbook for assignment of grades and academic dishonesty.

ACADEMIC DISHONESTY

The instructor or person accusing a student of academic dishonesty will report the incident to the MLT Program Coordinator, and the coordinator will investigate the matter. If it is determined that the incident warrants further action, the guidelines in the Moberly Area Community College Student Policy Handbook will be followed for dealing with academic dishonesty.

A student who has committed an act of academic dishonesty has failed to meet a basic requirement of satisfactory academic performance. Thus, academic dishonesty is not only a basis for disciplinary action but is also relevant to the evaluation of the student's level of performance. Unacceptable behavior includes but is not limited to cheating, plagiarism, submission of someone else's work as one's own, and the unauthorized access to or changing of grades or examinations.

Cell phones must be off and out of sight during exams. Any cell phone visible during an exam could constitute basis for suspected academic dishonesty.

PROBATION

Failing an MLT course is grounds for dismissal from the MLT program. A student may be readmitted on probationary status, retake the class, and finish the program. A student who is in jeopardy of failing an MLT course, due to low examination scores or poor acquisition of skills at a clinical site, may also be placed on probation. Extra laboratory instruction and/or repeat examination are at the discretion of the instructor and approval of the MLT Program Coordinator. The student will make conference appointments with the appropriate instructor until such time that the student is progressing at a satisfactory level and is no longer in jeopardy of failing. Following the conference, a progress report will be provided to the student and the MLT Program Coordinator as written documentation of areas of progress and areas of deficiency. If performance falls below acceptable levels and the student does not make satisfactory improvement, the student faces dismissal.

DISMISSAL

Dismissal is the discontinuance of the student from the MLT program. Depending on the act, this can be immediately pursuant to or after failure to complete a probationary period satisfactorily.

Failure (D or F) or WU (withdraw unsatisfactory) in an MLT course results in an automatic dismissal from the program. Students receiving a grade of less than "C" in an MLT course may, if readmission is approved, repeat that course one time. Students who receive a grade of "D, F, or WU" in two MLT courses or in the same MLT course two times will be dismissed from the program without consideration for readmission. A student failing an MLT course must repeat that course in the next available year on a space available basis.

Other reasons for dismissal include but are not limited to the following:

1. Unprofessional conduct, such as disrespect toward instructors, co-workers, patients, or fellow students or persistent and deliberate disregard of rules and regulations of the clinical sites;
2. Negligent acts or irresponsibility that results in serious or potentially serious harm to patients;
3. Illegal use or possession of drugs or controlled substances known to have a mind-altering effect upon the human body or that impair ability to perform safely;
4. Inappropriate use of drugs or alcohol;
5. Conviction of a felony or crime;
6. Guilty of fraud, deceit, or omission of information that could affect the application process in gaining admission into the program;
7. Breaching confidentiality of patient information;
8. Any probationary items on which a student does not show immediate and sustained improvement;
9. Academic dishonesty.

Students who have been dismissed for the above stated reasons (1-9) will not be considered for readmission. The Director of Allied Health will recommend dismissal to the Dean of Career and Technical Education. The recommendation will be taken to the President's Administrative Council for action. Students who drop or are dismissed from the MLT Program because of failure in an MLT course must submit a written request for readmission to the MLT Program Coordinator. With recommendations from the faculty, the MLT Admissions Committee will evaluate the request.

READMISSION

Students who fail a course or who drop from their program of study for personal reasons must request readmission. The student must write a letter to the MLT Coordinator requesting readmission and obtain three new letters of recommendation from program affiliates and/or faculty. If enough time has passed, new background checks may need to be completed. The program coordinator will present the information to the Admissions Committee and they will evaluate the request for readmission, and it will be granted on a space available basis. Students receiving less than a grade of "C" in a support course will have to repeat that course and make a "C" or better before consideration for readmission. Students receiving a grade of less than "C" in an MLT course may, after readmission is approved, repeat that course one time. Students who receive a grade of "D", "F", or "WU" in two MLT courses or in the same MLT course two times will be dismissed from the program without consideration for readmission. Former Moberly Area Community College students who were academically unsuccessful but are eligible for readmission will receive priority for readmission over transfer students.

RECORDS

Maintenance of student records conforms to government regulations and the accrediting agency, the Higher Learning Commission. The MLT Program Coordinator will hold student records such as copies of transcripts, admission information, health records, evaluations, counseling, and advising session for five years in a fireproof file cabinet. The Registrar maintains final course grades permanently. At midterm, students receive progress reports. Instructors may post test grades anonymously. Of course, students can request conferences at any time with the MLT Program Coordinator or any other instructor to discuss grades, problems, concerns, or issues.

CONFIDENTIALITY

All members of the health care team must judiciously protect the patient's right to privacy. Patients trust members of the health care team to hold all information in strict confidence any violation of this trust is unethical. Patient information is not to be discussed except with those who are directly involved with the patient's care. Please sign the confidentiality agreement in the Appendix 4.

NATIONAL CERTIFICATION EXAMINATION

The Moberly Area Community College Medical Laboratory Technician program prepares students to take the American Society for Clinical Pathology (ASCP) certification examination. Having passed the MLT-ASCP registry exam, graduates of a Medical Laboratory program are eligible to work in most states. Most medical laboratories seek to hire trained, accredited personnel. California, New York, Florida, Montana, Nevada, North Dakota, Rhode Island, Hawaii, Louisiana, Puerto Rico, West Virginia, and Tennessee require licensure in addition to a certification exam.
Prior to graduation from the MLT program, students should contact the ASCP offices to obtain application forms to take the registry. The examining body requires the application, official transcript, and test fee be submitted by the deadline date, or the application will be considered for the next examination period.
Following is the address for the American Society for Clinical Pathologists (ASCP):

ASCP Board of Registry
P.O. Box 12270
Chicago, Illinois 60612-027
1-312-738-1336 ext 364 or 368
www.ascp.org/bor

The registry exam is administered at Pearson Professional Centers. A list of locations is available on the ASCP website. Students schedule an appointment to take the examination Monday through Saturday within the chosen testing period.

APPENDIX 1

RECOMMENDATIONS FOR PREVENTION OF BLOOD-BORNE PATHOGENS

BLOOD-BORNE PATHOGENS POLICY

All Allied Health students will utilize the following policies regarding exposure to blood-borne pathogens in conjunction with the policies of the individual clinical agencies regarding blood borne pathogens:

1. Universal standard precautions shall be observed to prevent contact with blood or other potentially infectious materials. This includes body fluids—semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva, and any body fluid that is visibly contaminated with blood. This also includes all situations where it is difficult or impossible to differentiate between body fluids and includes any unfixed tissue or organ from a human (living or dead) by all students in both laboratory and clinical settings.
2. Recapping, bending, breaking, and sharing of needles/sharps are strictly prohibited in clinical settings and college laboratories.
3. Eating, drinking, smoking, applying cosmetics, or lip balm and handling contact lenses are prohibited in work areas where there is reasonable likelihood of exposure to infectious material.
4. All procedures involving blood and other potentially infectious materials shall be performed in such a manner as to minimize splashing, spattering, and generation of droplets of these substances.
5. Mouth pipetting/suctioning of blood or other potentially infectious materials is prohibited.
6. Students must utilize all personal protective equipment such as, but not limited to, gloves, gowns, laboratory coats, face shields, masks, and eye protection, mouthpieces, resuscitation bags, pocket masks, and other ventilation devices. All protective equipment shall be removed prior to leaving the work area and placed in the appropriately designed area or container for storage, washing, decontamination, or disposal.
7. Broken glassware which may be contaminated shall not be picked up by hand. It shall be cleaned up using mechanical means, i.e., dustpan and brush or tongs.

EXPOSURE PROCEDURE

Potential Exposure to Blood-Borne Pathogens

1. Report the potential exposure to instructors.
2. Document what the incident was, how it occurred, and the resident source involved.
3. The area of potential exposure with the exception of a splash to the eye should be cleaned well with soap and water. Most splashes to the eye are flushed via the normal tearing process. If no tears are present, eyes may be flushed with normal saline solution.
4. The residual source should be tested for Hepatitis B Surface Antigen (HBsAG), Human Immunodeficiency Virus Antibody (HIV), and Hepatitis C antibody (anti-HCV) only after providing counseling regarding this testing and obtaining consent for such testing.
5. Testing needles or sharps involved in the incident is not recommended.
6. The student should be counseled regarding his/her risk of Hepatitis B (HBV), Hepatitis C (HCV), and HIV and offered testing for HCV and HIV. The student shall not be tested until he/she has been counseled and has given consent for HCV and HIV testing. The recommended testing schedule for HIV testing of a student post blood exposure is as follows:

    a. At the time of the incident
    b. Six weeks post incident
    c. Twelve weeks post incident
    d. Six months post incident

The recommended testing schedule for the person exposed to an HCV-positive source is as follows:

a. Perform baseline testing for anti-HCV and ALT activity;
b. Perform follow-up testing (e.g., at 4-6 months) for anti-HCV and ALT activity (if earlier diagnosis of HCV infection is desired, testing for HCV RNA may be performed at 4-6 weeks);
c. Confirm all anti-HCV results reported positive by enzyme immunoassay using supplemental anti-HCV testing (e.g., recombinant immunoblot assay [RIBA TM]).

*Recognize that all costs for the testing will be borne by the student.

7. If the source resident (patient) is positive for HBsAG, the student should be treated in the following manner:
    a. If the student has received the Hepatitis B vaccine series, he/she should be tested for HBsAG. If adequate levels are in the blood, no further treatment is needed. If inadequate levels are in the blood, the student should receive another dose of the vaccine and one dose of Hepatitis B antibody (HBIG).
    b. If the student has not received the Hepatitis B vaccine, the series should be started at this time and one dose of HBIG given also.

*Note: HBIG should be given within seven (7) days to be effective.

8. If the source resident (patient) is negative for HbsAG, and the worker has not been vaccinated, use this opportunity to start the vaccine series.
9. If the source resident refuses or is unable to give consent to be tested, the patient should be evaluated via medical history for risk factors to Hepatitis B. Based upon this history HBIG may be recommended. If the student has not received the Hepatitis B vaccine series, it should be started.
10. If the resident source is found to be HCV or HIV negative, no further follow up of the student is recommended.
11. If the resident source is found to be HCV or HIV positive, is unable to give consent, or refuses to be tested, the student should be encouraged to be tested for HCV or HIV on the previously stated schedules, and should be instructed to report any febrile illness occurring within the first twelve weeks of the incident. Symptoms of a febrile illness include:
    a. Fever
    b. Rash
    c. Enlarged lymph glands
12. When a student has been exposed to an HCV-positive source, IG and antiviral agents are not administered because clinical studies have not found them to be effective in preventing infection.
13. If the source of the splash or puncture wound is unknown, the decision to test should be evaluated on an individual basis. Epidemiology should be considered. Situations, geographic area, populations, or types of exposure are evaluated in assessing risk.
14. Careful attention should be given to record keeping regarding the incident and any testing, to provide and protect the confidentiality of both the resident and student member.

Reference:

U.S. Department of Health and Human Services—Public Health Service—Centers for Disease Control. (1989, June 23). Guidelines for Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Health Care and Public Safety Workers. Morbidity and Mortality Weekly Report. 38(No. S6).

OSHA: Meeting the New Requirements. Quality America, 1992.

U.S. Department of Health and Human Services—Public Health Service—Centers for Disease Control. (2001, June 29). Updated US Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis. Morbidity and Mortality Weekly Report. 50(RR11), 1-42.

HEPATITIS B VACCINATION POLICY

In accordance with clinical facility policies and Occupational Safety and Health Administration (OSHA) regulations (Federal Register, Vo. 56, No. 235) the following policy is set forth for all nursing, medical laboratory, and emergency medical services students:

All students in MACC's above listed health occupation programs are technically considered to be included in "high risk" categories of occupational exposure to blood-borne pathogens by OSHA. OSHA defines "high risk" as having a minimum of one exposure to blood/blood pathogens per month and strongly recommends that all health care workers in high risk categories be vaccinated against Hepatitis B. Although the OSHA regulations address health care employers and workers, they do not include students in any part of the directive.

The OSHA directive does not make receiving the vaccination mandatory, but it does make it mandatory to inform persons of the risk, the nature of the disease, the vaccination pharmacology, and protective measures to minimize infection through proper handling of hazardous materials, personal protective measures, and policies/procedures to minimize exposure as well as the procedures to report and handle exposures. Appropriate training in class will be provided in class.

Medical Laboratory Technician students must obtain the vaccine at their own expense prior to training at clinical facilities and provide the MLT Program Coordinator with documentation of having received it.

APPENDIX 2

SAFETY REGULATIONS INCIDENT EXPOSURE PROTOCOL

SAFETY REGULATIONS

When working in the student laboratory and in clinical rotations at affiliate laboratories, Medical Laboratory Technician students adhere to safety precautions to protect themselves, coworkers, and families. The following safety guidelines pertain to three categories of hazards: physical, chemical, and biological. Each type of hazard has appropriate safety equipment and rules to follow.

Physical hazards are those present in the environment or that arise when using equipment. For ultraviolet light (UV), electrical and fire hazards use the following guidelines:

- Turn off a UV light when it is not actually in use.
- Do not look into the UV light with unprotected eyes. Wear UV blocking glasses if you must work when it is on.
- Periodically inspect the external wiring of instrumentation. Have worn wires replaced.
- Do not handle equipment or connections with wet hands.
- Analytical instruments must be grounded with three-pronged plugs.
- Do not use electrical equipment where flammable vapors might be present because there is an increased risk of fire.
- Laboratories must be equipped with fire blankets, extinguishers, and personnel trained to use them.
- Laboratories should display emergency exits and conduct periodic safety drills.

Chemical hazards involve the storage and use of chemicals. **Corrosive** chemicals cause visible destruction of human tissue at the site of contact. **Flammable** and reactive chemicals explode or emit dangerous vapors when mixed with water. **Toxic** chemicals cause serious biologic effects when small amounts are inhaled, ingested, or absorbed. The laboratory must adhere to the following regulations:

- Never pipette by mouth.
- Store only small quantities of caustic/hazardous material in the laboratory. Volatile material should be stored in a well-ventilated area. Volatile material should never be stored in an unmodified household refrigerator or in any equipment where a spark could arise.
- When handling chemicals that produce toxic fumes, always work in a fume hood.
- Handle chemicals carefully to avoid splashing into the eyes or onto the skin.
- When working with concentrated corrosives or toxic chemicals, wear protective equipment such as chemical gloves, eye protection, chemical apron, and fume mask.
- All containers must be clearly labeled with the contents and any associated hazards.
- Document in an Incident Log kept in the laboratory, clean-up procedures for chemical spills and treatment for burns. Notify an instructor immediately if an accident occurs.
- Material Safety Data Sheets (MSDS) must be available in the laboratory.

Biological hazards are infectious agents from patients and specimens. Microorganisms can enter the body through the hands, mouth, eyes, ears, breaks in the skin, and needle sticks. Medical Laboratory Technician students observe the Bloodborne Pathogens Policy and Exposure procedure established by the Moberly Area Community College Allied Health Department. See pp. 48 and 49. Reiteration and elaboration at this point can only benefit students and is necessary for MLT students because of the nature of the program.

Clinical laboratory personnel and phlebotomists are at high risk for exposure to HIV and Hepatitis B virus. For this reason, they must adhere to Universal or Standard Precautions, a method of infection control, which assumes that ALL blood, body fluids, and tissues are infected with HIV, hepatitis viruses, and other pathogenic organisms. Laboratory personnel using Standard Precautions reduce the risk of transmission of microorganism from both recognized and unrecognized sources of infection by following five main points.

- Wash hands when changing gloves and between patients;
- Wear gloves when drawing blood or if likely to touch body substances, mucous membranes, tissue, or non-intact skin;
- Wear protective cover when clothing is likely to be soiled;
- Wear a mask and eye protection in addition to a protective body cover when likely to be splashed with body substances;
- Place intact needle/syringe and sharps in designated sharps containers. Do not bend, break, or cut needles.

In addition to adhering to the above measures, laboratory personnel and phlebotomists must do the following:

- Keep hands away from eyes, mouth, nose, etc. Keep pens out of the mouth.
- Wash hands thoroughly with antimicrobial soap when contaminated, before touching uncontaminated articles, after removing gloves, and before leaving the laboratory. Remove personal protective equipment before washing hands at the completion of laboratory.
- Never eat, drink, chew gum, apply lip balm, comb hair, insert contact lenses or smoke in the laboratory. Food is not stored in the same place as specimens, reagents, and media.
- Dispose of contaminated culture plates and tubes as well as all contaminated trash in appropriate biohazard containers as directed by your instructor.
- Dispose of pipettes, microscope slides, and other sharp items in a puncture resistant biohazard container as directed by the instructor.
- Discard broken glass in the special containers provided NOT in regular trash. Do not pick up broken glass with your hands. Use forceps, scoop, rigid cardboard, or dustpan and brush.
- Restrict access to the lab area only to those familiar with risks.
- Prevent aerosols by checking tubes for cracks and stoppering tubes before centrifugation. Additionally, use a pipette to remove plasma or serum from a tube of blood instead of decanting. When manipulating bacterial colonies on agar plates, cool a flamed loop before picking up a colony.

- Clean up countertops with disinfectant before beginning work, after spills, and when work is completed. A fresh 1:10 dilution of household bleach is effective.
- NEVER RECAP NEEDLES. Dispose of them in a sharps container to prevent a needle stick.
- Cover cuts to the skin.
- Wear closed toed shoes in addition to the lab coat. Pull long hair back and tie it to prevent contact with contaminated materials.
- Wear protective face shields that cover eyes, nose, and mouth during procedures that are likely to generate aerosols of blood or body fluids.
- If a culture or other biological specimen spills, cover the contaminated area with a paper towel, tissue paper wipes, or absorbent powder. Pour disinfectant on top, and notify an instructor. NOTE: Students are NOT to clean up classroom spills.

SAFETY EQUIPMENT

Fire extinguishers – To operate: PASS (Pull pin, Aim, Squeeze lever, Sweep side to side)
Fire blanket
Eyewash
Shower
Fume Hood
Eye protection (goggles)
Gloves
Lab coats (worn only in the laboratory, removed before washing hands)
First aid kit

FIRST AID

Direct pressure and elevation will stop bleeding from most wounds. Always use direct pressure. Use a thick pad of cloth and apply pressure by hand. Press hard.
Do not disturb blood clots after they have formed beneath the cloth. If blood soaks through the entire pad without clotting, do not remove the pad instead add additional thick layers of cloth and continue the direct hand pressure even more firmly.

If it does not cause pain and if you do not suspect broken bones, elevate the wound when you apply direct pressure (i.e. raise the injured part of the body above the level of the victim's heart). Elevation uses the force of gravity to help reduce blood pressure in the injured area and thus blood loss slows down. Continue direct pressure on the wound. Shock depresses body functions and can keep the heart, lungs, and other organs from working normally. Extreme pain and fright can make it worse. Even if injuries do not directly cause death, the victim can go into shock and die. Anyone with a serious injury must have medical care—even if he or she seems to have recovered.

Do your best to comfort, quiet, and soothe a victim. Keep him or her lying down, comfortable, and maintain a normal body temperature. If it is hot, provide shade; if it is cold, provide protection from cold both under and over the victim. Cover the victim only enough to keep him or her from losing body heat. Get medical help as soon as possible. A burn is an injury that results from heat, chemical agents, or radiation. It may vary in depth, size, and severity causing injury to the cells in the affected area. Burns may affect the respiratory system also if hot air or irritating gases are inhaled.

Burns are usually classified according to depth or degree of skin damage. First-degree burns result from exposure to radiation or the sun, light contact with hot objects, or scalding by hot water or steam. There are no blisters present. Apply cold water or submerge the burned area in cold water if the burn is first degree.

Second-degree burns result from contact with hot liquids, deep sunburn, and flash burns from flammable liquids. Blisters develop and the skin surface takes on a wet appearance due to loss of plasma through the damaged layers of the skin. If the burn is second degree, immerse it in cold water (not ice water) until the pain subsides. Do not remove skin, break blisters, or apply ointment. Apply dry, sterile gauze or clean cloth as a protective bandage. Elevate arms and legs if they are burned.

Third-degree burns can be caused by contact with hot objects, electricity, flame, ignited clothing, or immersion in hot water. They may look like second-degree burns at first but eventually will appear white or charred. If the burn is third degree, do not remove skin or charred clothing. Cover burns with sterile dressing or clean cloth. Elevate arms and legs if burned. Keep victims with face burns upright and observe closely for breathing difficulty. Cold packs may be applied to the face, hands, or feet. Do not apply ointments or immerse in cold water. Get medical help as soon as possible.

EXPOSURE INCIDENT PROTOCOL

Protocol must be followed in incidents involving eye or mouth mucus membranes, non-intact skin, or parenteral exposure to blood or other potentially infectious materials.

For a skin exposure incident that occurs at the Advanced Technical Center MLT student laboratory using blood or fluid specimens donated by an affiliate clinical site:

1. Immediately and thoroughly wash the exposed skin with soap and water. If an eye or mucous membrane has been exposed, rinse the area with cool running water for fifteen minutes.
2. Seek first aid if the injury requires it.
3. Immediately notify the instructor after washing the exposed site.
4. An Accidental Injury Report Form or Blood borne Pathogen Exposure Incident Form must be completed to document the incident or route of exposure.
5. Notify the Director of the Advanced Technical Center who will investigate the incident and make decisions for a course of action. Recommendations will depend on the type of exposure.
6. The MLT Program Coordinator or instructor will make every effort to get permission from the source person to have his or her blood tested for blood borne pathogens.
7. Expenses associated with an exposure incident are the responsibility of the student.

If the exposure or injury occurs at an affiliated hospital the following procedure is followed:

- Cleanse the exposed tissues or membranes per protocol.
- Report to clinical instructor or preceptor, then to the clinical facility's designated exposure control officer. The student follows the protocol of the clinical facility. The student may be referred to the emergency room. Treatment will be at the student's expense.
- The student must report the incident to the MLT Program Coordinator. Failure to report the exposure incident may result in disciplinary action

.

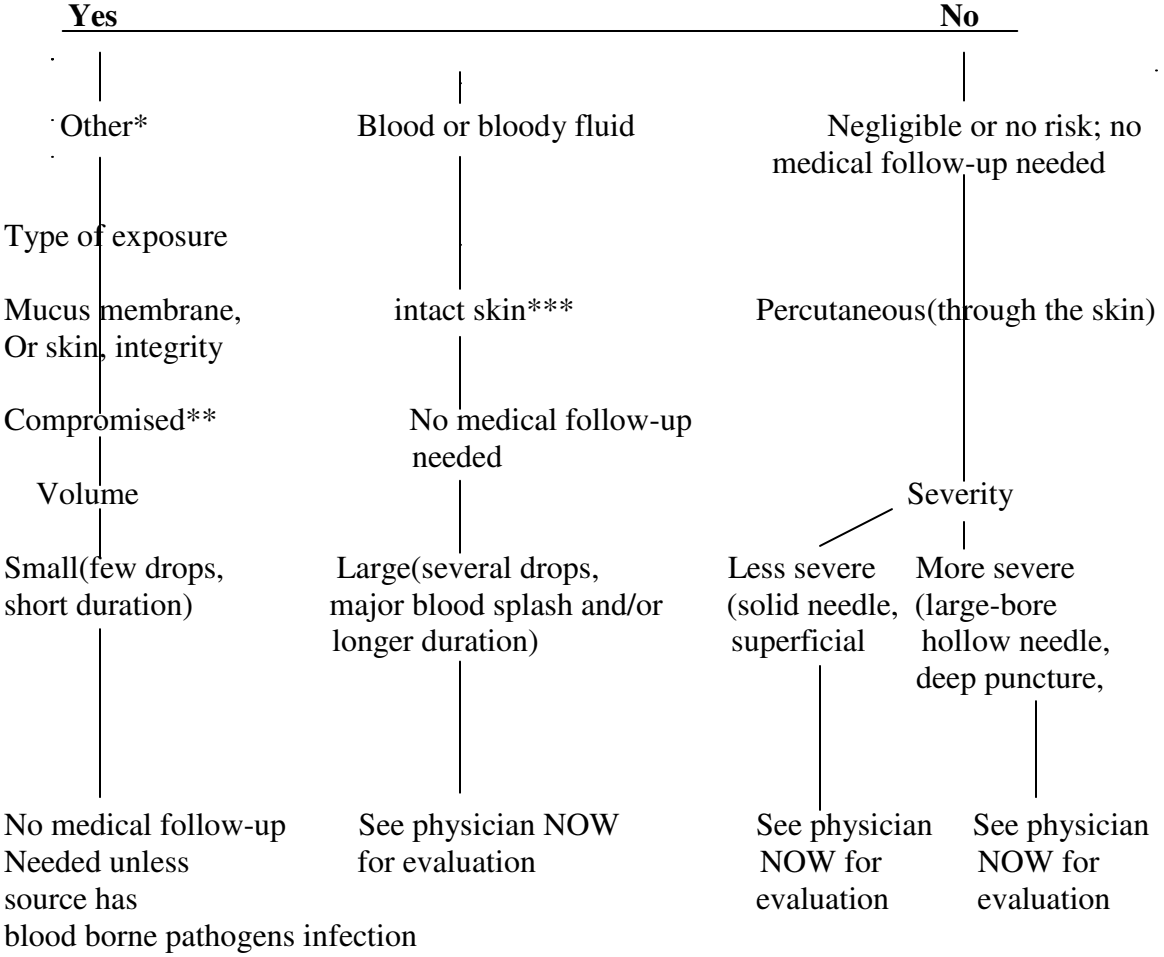
See Exposure Procedure p 49 and 50 of Student Handbook. Follow-up after an exposure incident may include:

- Collection of blood from the exposed student, as soon as possible after the exposure incident, for determination of HIV, HBV, and/or HCV;
- Collection of blood from the source patient to determine the presence of HIV, HBV, and/or HCV infection, if consent is given;
- Additional repeat testing for HIV, HBV, and/or HCV six (6) weeks, twelve (12) weeks, six (6) months, and one (1) year after exposure;
- Tetanus shot, Hepatitis B Immune Globulin, Hepatitis B vaccine, and post-exposure prophylaxis with antiretroviral drugs (ZDV plus 3 TC plus IDV);
- Counseling and medical evaluation;
- Drug toxicity monitoring (CBC, renal and hepatic chemical function—baseline measurement and two weeks after drugs are initiated);
- Recommendation to follow precautions to prevent possible secondary transmission.

Medical Attention Flow chart

If an injury or incident involving biohazardous material occurs at the Advanced Technology Center, the following flowchart may be used to determine if the student requires medical attention.

The MLT Program Coordinator, instructor, or other attendant official should ask himself/herself the following question: Is the source material blood, bloody fluid, tissue, other potentially infectious material* (semen, vaginal secretions, cerebral spinal fluid (CSF), synovial, pleural, peritoneal, pericardial, or amniotic fluid, saliva), or an instrument contaminated with one of these substances?



*Exposures to semen, vaginal secretions, saliva, CSF, synovial, pleural, peritoneal, pericardial, or amniotic fluid must be evaluated on a case-by-case basis. In general, these body substances are considered a low risk for transmission in health care settings.

** Skin integrity is considered compromised if there is evidence of chapped skin, dermatitis, abrasion, or open wound.
***Contact with intact skin is not normally considered a risk for HIV transmission.

However, if the exposure was to blood and the circumstance suggests a higher volume exposure (e.g., an extensive area of skin was exposed or there was prolonged contact with blood), the risk for HIV transmission should be considered.

If there were no exposure to blood or other potentially infectious material, the risk of transmission is negligible-to-no risk, and no medical follow-up is required. If there were a percutaneous injury, the wound should be watched for signs of infection or soft tissue damage.

If there were exposure to intact skin only, no medical follow-up is required. However, if the exposure was to blood and the circumstance suggests a high volume exposure (e.g., an extensive area of skin was exposed or there was prolonged contact with blood), the risk for transmission of blood borne pathogens should be evaluated by a physician.

Adapted from Public Health Service guidelines for the management of healthcare worker exposures to HIV. MMWR Morbidity and Mortality Weekly Report 1998:47 (RR-7);1-33

MOBERLY AREA COMMUNITY COLLEGE
MEDICAL LABORATORY TECHNICIAN PROGRAM

BLOOD BORNE PATHOGEN EXPOSURE INCIDENT REPORT FORM

To be completed by Faculty and Staff

Person Exposed:_____
Last First Middle

Social Security Number:_____

Home Address:_____
_____

Date of Incident:_____
Time of Incident:_____
Location of Incident:_____

Exposed to: Circle appropriate category(ies)

Blood
CSF
Semen
Vaginal secretions
Synovial fluid
Pleural fluid
Pericardial fluid
Peritoneal fluid
Amniotic fluid
Saliva

Any body fluid where it is impossible to determine identity of fluid or presence of blood, unfixed tissue or organ (specify if known)_____

Any body fluid visibly contaminated with blood (specify type of fluid, if known _____

Type of exposure: Circle appropriate category(ies)

Needle stick
Sharps

Contact with mucous membrane (specify type)_____

Contact with non-intact skin

Percutaneous (needle stick or sharps): Check appropriate category

Less severe (solid needle, superficial scratch) _____
More severe (e.g. large-bore hollow needle, deep puncture, visible blood on device or needle used in source patient's artery or vein) _____

Severity of Exposure to blood or bloody fluid: Check appropriate category
Estimated amount of fluid?

Small (e.g. few drops, short duration)_____
Large (e.g. several drops, major blood splash and/or
longer duration i.e., several minutes or more)
Estimated length of exposure (if applicable):_____

Source of exposure: Check appropriate category
Patient at Clinical Site_____
Other Student (Name, if known)_____
Other Person (Name, if known)_____

Describe activity leading to exposure and how exposure occurred:

_____

Witnesses:_____
_____

Was protective equipment in use at the time of incident? (Circle appropriate category(ies)
Gloves Gown/apron/lab coat Face mask Other_____

Describe immediate intervention: (Circle appropriate category(ies)
Was area washed? Flushed? Other_____

Persons notified of incident (Circle appropriate category(ies)
Clinical Site Supervisor:_____
Faculty Supervisor:_____
Other:_____

Clinical Site incident report completed?
_____yes Date of report_____
_____no

_____ _____
Signature of individual completing report Date/time report completed

Printed or typed name and title (if applicable) of person completing report

APPENDIX 3

GUIDELINES FOR STUDENT WORK

USE OF APA GUIDELINES FOR REFERENCE CITATIONS

The most commonly used guidelines for citing references in American Psychological Association (APA) style are described below. Consult the latest edition of the Publication Manual of the American Psychological Association, for more complete directions.

In-Text Citations

Use citations in the text to acknowledge the use of someone else's ideas, compilation of facts or statistics, exact words, or opinions. The citations indicate where you found the material. No reference is needed for general (lay) knowledge.

Use the author-date (surname of the author followed by the year of publication) method of citation; for example, "Smith (2001) compared reaction times…" alternatively, "In a recent study of reaction times (Smith, 2001)…"
Within a paragraph, after once citing the author and year, further reference to the same work need only include the author's name. An example of this would be the following: "In a recent study of reaction times, Smith (2001) described the methods…Smith also found…"

When a work has two authors always cite both authors' names; for example, "Brunner and Suddarth (2000) list these signs and symptoms…" or "The classical signs identified by (Brunner and Suddarth, 2000) are…"

When there are more than two and fewer than six authors, cite all authors the first time, and then with each subsequent citation include the first author's surname followed by "et. al." and the year. An example of this would be the following: "Williams, Jones, Smith, and Torrington (2001) found…" then later in the paper, "Williams et. al. (2001) found…" or "A recent study (Williams, Jones, Smith, and Torrington, 2001) found…then "In this study (Williams et. al., 2001) it was found that…"

When there are more than six authors, cite the first author's name followed by "et. al."

Reference List

The purpose of the reference list is to identify for readers, in alphabetical order, the sources used in the writing of the paper. You have already cited these same sources. All citations appearing in your text should appear in the reference list and vice versa. A reference list includes only recoverable references. Do not include personal communications; these are cited only in the text.

Each entry usually contains the following elements in this order: Author, year of publication, title, and publishing data. Give special attention to the spelling of proper names and to completeness of journal title, year, volume, number, and page numbers. Following are some examples of different reference entries in APA style. For more examples that are complete, consult the APA manual.

Journal References:

Format
Author, A.A., Author, B.B., & Author, C.C. (year). Title of article. Title of Periodical, volume (issue number, page numbers.

Examples
Capetandes, A. (1999). Polymerase chain reaction—the making of something big, Medical Laboratory Observer, 31(2), 26.

Glassman, A., Hopwood, V.I., Schwartz, D.J. (2000). Improving diagnosis of hematologic neoplasms. ADVANCE for administrators of the laboratory, 9(1), 58-61.

Jaiyesimi, I.S., Giralt, S., Wood, J., (1991). Subcutaneous granulocyte colony-stimulating factor and acute anaphylaxis. New England Journal of Medicine, 325(8), 587.

Books:

Format
Author, A.A., Author, B.B., & Author, C.C. (year). Title of book. Location: Publisher.

Examples
Turgeon, M. (2005). Clinical Hematology: Theory and Procedures. (4th ed.) Baltimore, MD: Lippincott.

Bishop, M.L., Fody, E.P., Schoeff, L.E. (2005). Clinical chemistry: Principles, Procedures, Correlations. (5th ed.) Baltimore, MD: Lippincott.

Venes, D. (ed.) (2001). Taber's Cyclopedic Medical Dictionary. Philadelphia, PA: F.A. Davis Co.

Internet Sources:

Format
Author, A.A. (2000). Title of Work. Retrieved month, day, year, and source http://www.xxxxxxxxxxxx.

Stuart, G. (2000). Legal implication for nurses. Retrieved November 11, 2001 from http://www.nurseawhelp.org.

Mayo, A. (1997). Self-Care Theory in the Ambulatory Setting. Retrieved September 20, 2000from http://www.members.aol.com/annmrm/nursing.portifolio I index.html.

Wound Care Information Network. (2002). Staging Pressure Ulcers. Retrieved May 15, 2002 from http://www.medicaledu.com/staging.html.

ANNOTATED BIBLIOGRAPHY CARD GUIDELINES

The purpose of an annotated bibliography card is to give a brief summarization of a current journal article on a particular subject. A secondary gain is to establish in the student the habit of reading current health-related literature to keep abreast of the changes and advances in medical laboratory technology after graduation.

1.	Correct reference format using APA style	2 points
2.	Professional source used (journal, book, or on-line source)	1 point
3.	Related to the unit being studied	2 points
4.	Evaluation of the article with relevance to the clinical rotation	1 point
5.	Written or typed on single index card (5 x 9)	1 point
6.	Submitted in a complete and timely manner. (Accepted only on the date of each unit exam)	1 point
7.	Brief summarization of the main point of the article	2 points
	TOTAL POINTS	10 points

Do not evaluate the article within your summary with comments such as, "This is a good or interesting article." Your reference must be in APA style. A copy of the APA manual is available in the Coordinator's office.

Use professional sources only. This includes using journals and websites, etc. This does not include Reader's Digest, People Magazine, Woman's Day, or other popular literature that is for the lay public. If you have doubts about your source, consult your instructor.

Format for a Bibliography card acquired from a written source:

Hoag, K, Lillie, J, and Hoppe, R. (2005). Piloting case-based instruction in a didactic clinical immunology course. Clinical Laboratory Science, 18(4), 213-220.

Summary: This article presented a study designed to determine if Problem-Based Learning (PBL) and Cooperative Learning (CL) techniques used in combination with a lecture format in the instruction of an immunology course increased students' critical thinking ability. Study developers also desired to vary information delivery. A lecture format is a passive way to deliver information. Students demonstrated boredom, distractibility, and reduced attendance, particularly on Friday.

After hearing lectures on specific topics earlier in the week, students in groups worked in class to answer questions on case studies. The educators studying this Problem-Based Learning technique using case studies found through testing that student critical thinking skills did not seem improved; however, students reported feeling more comfortable with the material and welcomed the learning technique as a change of pace. Class attendance improved also. Educators decided that perhaps their exam questions did not truly test critical thinking skills. They resolved to continue studying this method of teaching because it places the burden of learning on the student.

Evaluation: This article presented two alternative techniques for teaching, PBL and CL. In developing lectures that engage students, it furnished me with ideas on how to improve information delivery. Lecturing can be boring for both the instructor and for the students so using alternative methods would boost interest all around. I appreciated learning about these techniques and recalled that the University of Missouri School of Medicine adopted this method several years ago with excellent results.

WRITE-UPS

Write-ups must include the following:

Specimen collection, handling, storage, and preparation

Immunologic/physiologic theory

Principle of method(s)

Disease manifestation/clinical correlation

Causes of problems or unexpected results or sources of test error

APPENDIX 4

CONFIDENTIALITY

MOBERLY AREA COMMUNITY COLLEGE
MLT PROGRAM

CONFIDENTIALITY STATEMENT

I have a responsibility to protect patient data. I understand that any information or data compiled for educational studies may not include or reflect patient identity or any information that could identify the patient. I must hold in strict confidence all patient information obtained while enrolled as a student in the Associate of Applied Science MLT Program at Moberly Area Community College.

I further understand that federal legislation, the Health Insurance Portability and Accountability Act (HIPAA) governs the confidentiality of health care practitioners who are expected to comply with these rules. Failure to comply and/or wrongful disclosure of information may subject the individual to civil and criminal penalties as prescribed by law.

_____ _____

Student Signature Date

APPENDIX 5

INSURANCE POLICY STATEMENT

MOBERLY AREA COMMUNITY COLLEGE

STUDENT INSURANCE AGREEMENT

I, _____, understand that professional liability insurance for Medical Laboratory Technician students is provided for me through the College's general insurance policy maintained with the Missouri United School Insurance Council (M.U.S.I.C.) and have received a description of that coverage.

The insurance is provided to me at no charge and is limited to coverage as specified in the M. U. S. I. C. insurance policy. This coverage does not preclude me from obtaining any additional coverage that I may desire.

_____ _____

Student Name Date

APPENDIX 6

RELEASE OF INFORMATION

MOBERLY AREA COMMUNITY COLLEGE
ASSOCIATE OF APPLIED SCIENCE DEGREE
MEDICAL LABORATORY TECHNICIAN PROGRAM

RELEASE OF INFORMATION FORM

Full Name:_____

Maiden/Alias Name(s):_____

Address:_____

City:_____ State:_____ Zip:_____

Social Security:_____

Date of Birth:_____

Place of Birth:_____

Sex: Male:_____ Female:_____ Ethnicity:_____

I authorize Moberly Area Community College to request and obtain a copy of my criminal background as provided in Section RSMo. 610.120 and make an inquiry to the Department of Social Services regarding the "Employee Disqualification List" as provided in Section RSMo. 660.315. I also authorize Moberly Area Community College to request and obtain a copy of my drug screen results, a Division of Family Services background check regarding child abuse or neglect, and a background check with the Office of Inspector General. I also realize I must provide a criminal background check for each state in which I have lived within the past ten (10) years.

I further authorize Moberly Area Community College to provide the necessary documentation of all the above stated information to individual clinical affiliates, to verify my eligibility to participate in the clinical experience.

Signature_____

Date_____

Witness_____

Date_____

APPENDIX 7

POLICY MANUAL ACKNOWLEDGMENT FORM

ACKNOWLEDGMENT FORM

I _____ have received and read the Moberly
Student (Please print)
Area Community College Associate of Applied Science Medical Laboratory Technician (MLT) Program Student Handbook. I have had an opportunity to ask questions and seek clarification as of the date indicated below. I understand that I am responsible for knowing the contents of the Handbook.

I agree to adhere to the policies in this Handbook and the MLT Code of Ethics.

Student Signature_____ Date_____

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