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## INTRODUCTION

Allegany College of Maryland, University of Pittsburgh Medical Center - Bedford Memorial Hospital, Western Maryland Regional Medical Center, Meritus Medical Lab - Robinwood Center and Meritus Medical Center, Grant Memorial Hospital, Garrett Regional Medical Center, Somerset Hospital, J.C. Blair Health System, and Summit Health - Chambersburg Hospital welcome you to the clinical part of your education.

You are urged to review the classroom notes from on-campus lecture/lab courses and to use the knowledge gained during these courses as a basis for the clinical rotation. The clinical practicum portion of your education will be entirely different from any other courses.

It is our philosophy that we cannot teach you everything there is to know about the clinical laboratory, but we can supply you with the necessary basic clinical information so that upon completing the program you will be able to meet the requirements for an entry level Medical Laboratory Technician. We hope the clinical practicum will help stimulate you to think and seek answers. Through observation, practical experience, and building on the knowledge you have already assimilated, you will become a member of an important team of health professionals.

Please keep in mind at all times that you are dealing with human life while you are in the laboratory. All patient information is **confidential**. The external clinical rotation is a privilege. Training at the bench is a time-consuming experience for clinical faculty. Training students can slow down the work flow in a department. Patient results are **always** the number one priority.

Our very dedicated clinical staff trainers don't receive compensation for training students. Be sure to express your gratitude as it is valued and appreciated. Clinical trainers appreciate students that are dependable, motivated, prepared, patient, responsible and respectful.

The attitude you project to others about your educational experiences is often a true reflection of yourself. You will get from the experience what you put into it. Good luck and we are here to support your learning.

The MLT Program at Allegany College of Maryland has enjoyed great success as evident by the job placement and certification examination scores below. We look forward to your successful journey.

Pass Rate on ASCP-BOC Examination and Job Placement Rate			
	Graduates between 7/1/14 - 6/30/15	Graduates between 7/1/15 - 6/30/16	Graduates between 7/1/16 - 6/30/17
<i>ACM MLT ASCP-BOC Pass Rate:</i>	100%	100%	90%
<i>National Average ASCP-BOC Pass Rate:</i>	82%	81%	81%
<i>Yearly Attrition Rate:*</i>	0%	12%	0%
<i>Yearly Graduation Rate:*</i>	100%	82%	100%
<i>Yearly Average Job Placement Rate:</i>	100%	87.5%	91%

\* Those beginning the "final half" of the program; ASCP-BOC - American Society for Clinical Pathology Board of Certification Examination

## **MLT PROGRAM GOALS**

1. Students will competently perform routine clinical laboratory tests.

### **Program Level Student Learning Outcomes Goal #1**

1. MLT students will perform laboratory test procedures accurately and efficiently.
  2. MLT students will analyze diverse types of information to choose an appropriate course of action in order to perform laboratory tests and solve problems accurately and efficiently.
2. Students will possess the professional attitudes and behaviors critical to being a valued member of the healthcare/workplace team.

### **Program Level Student Learning Outcomes Goal #2**

1. MLT students will communicate effectively using professional interpersonal skills resulting in successful interactions with colleagues and patients.
  2. MLT students will behave in a manner consistent with the standards of the laboratory profession.
  3. MLT students will describe the importance of continuing education in lifelong learning and in obtaining and maintaining professional credentialing.
3. The ACM MLT program student will meet the needs of the laboratory community by completing program academic and internship requirements to graduate from the MLT program, achieve industry certification, and obtain relevant field employment.

### **Program Level Student Learning Outcomes Goal #3**

1. Students will successfully complete the program.
2. Graduating clinical MLT students will pass the ASCP national certification examination.
3. Graduating MLT students will gain relevant professional employment within one year of graduation from the program.
4. MLT graduates and their employers will be satisfied with the training the student received in the ACM MLT program.

## **CURRENT ACM MLT CLINICAL AFFILIATE SITES**

University of Pittsburgh Medical Center: Bedford Memorial Hospital -Everett, PA  
Trivergent Health Alliance: Western Maryland Regional Medical Center- Cumberland, MD  
Trivergent Health Alliance: Meritus Medical Center - Hagerstown, MD  
Grant Memorial Hospital - Petersburg, WV  
Garrett Regional Medical Center - Oakland, MD  
Somerset Hospital - Somerset, PA  
J.C. Blair Health System - Huntingdon, PA  
Summit Health: Chambersburg Hospital - Chambersburg. PA  
Gonzaga Interventional Pain Management – LaVale, MD

## **STUDENT CLINICAL PLACEMENT POLICY**

Clinical Placement Policy applies to how students are selected to fill clinical affiliate rotation sites. A student is eligible for clinical rotation when he/she has satisfactorily completed the MLT didactic coursework in the student's course plan with a grade of "C" or better.

Students may be placed at clinical sites based on availability of sites, academic standing, and proximity to the student's residence. In the event that the clinical affiliate site cannot accommodate the number of students requesting the site, the four clinical rotations that make up the clinical practice sequence will be divided among requesting participants. This situation will require that a student travel to an alternative site affiliated with Allegany College of Maryland for all or part of the four required rotations.

The final placement is up to the discretion of the Program Director and internship representatives.

## **MLT 207, MLT 208 and MLT 210 CLINICAL PRACTICE COURSE DESCRIPTION**

### **DAY AND TIME OF CLINICAL ROTATIONS:**

MLT 207 and 208 are offered Tuesday and Thursday in fall and spring semesters respectively.

MLT 210 is offered Monday – Friday in the summer semester only.

### **REQUIRED MATERIALS**

Trajecsys Clinical Education Tracking  
Journal for note taking in clinical rotation  
Pen used exclusively for clinical rotation  
Scrubs (color and style chosen by the class members)  
Clean comfortable closed-toe shoes  
Health physical assessment  
Vaccination/titer documentation  
2-Step PPD  
Background check appropriate for the clinical affiliate system (\$50-\$100)

### **RECOMMENDED MATERIALS**

Board of Certification Study Guide, 5<sup>th</sup> edition, ASCP, Patricia Tanabe, ISBN 0891895876

Quick Review Cards, Valarie Polansky, FA Davis, ISBN 0803604599

Clinical Laboratory Science Review: A Bottom Line Approach, 5<sup>th</sup> edition, LSUHSC Foundation, ISBN 0967043425

## **I. PURPOSE**

### **A. COURSE SUMMARY/CATALOG DESCRIPTION**

**MLT 207, 208** 6 credit hours. Course is offered Tuesday and Thursday in the fall and spring semesters. Sixteen hours of clinical practice a week. Fee: \$100.00. Study and supervised practice in affiliated clinical pathology laboratories. Pass/Fail grading.

**MLT 210** 12 credit hours. Course is offered Monday-Friday in the summer semester only. The course is 448 hours of clinic/practicum. Fee: \$200.00. Study and supervised practice in affiliated clinical pathology laboratories. Pass/Fail grading.

These courses consist of a supervised health-related work experience that enables the students to apply specialized occupational theory, skills and concepts. Students rotate through the clinical affiliate site and complete 14 day rotations in: Clinical Chemistry/Urinalysis, Hematology/Coagulation, Blood Bank and Microbiology/Serology. MLT 210 includes all four rotations and MLT 207/208 each contain two rotations.

The student receives an annual schedule which details the clinical affiliate site and rotation sequence for each student. The student also receives a daily rotation schedule for each rotation. This daily rotation schedule contains the report time for each day as well as the days' tentative activities.

## **B. COURSE GOALS**

Successful completion of the clinical practice experience requires that a student be able to do the following :

- Demonstrate proficiency in the specific clinical objectives outlined for each rotation by passing the practical and written assessments given at the conclusion of each rotation.
- Maintain a safe laboratory environment by adhering to all applicable safety regulations presented throughout the MLT program.
- Demonstrate professional dependability by adhering to the dress code, through an excellent record of attendance, by being punctual, by obeying time schedules and by promptly notifying the MLT faculty and clinical faculty of any absences or tardiness.
- Demonstrate professional initiative by being prepared for each rotation day through reviewing material, asking questions and researching to deepen understanding, asking for additional work, and offering to assist clinical staff with tasks such as help restock supplies.
- Demonstrate professional reliability by completing all work and tasks given in a thorough and competent manner.
- Demonstrate good personal relationship skills through effective and appropriate written and oral communication with college, clinical laboratory and healthcare staff.
- Demonstrate progression in laboratory skills by effective organization, coordination of multiple tasks and insightful evaluation of results obtained.
- Utilize constructive criticism to correct deficiencies and improve performance.

## **C. SPECIFIC COURSE OBJECTIVES**

This handbook contains the specific rotation objectives. These objectives will help you take responsibility for your clinical learning and your review of the specific rotation's background material previously presented in the campus lecture/laboratory course. Use these to guide your study for the end of rotation examination.

#### **D. GENERAL EDUCATION GOALS**

Upon completion of this course the student will also demonstrate the following General Education goals. Competency related to these goals is evaluated as part of the professional conduct evaluation for the course.

##### **Gen. Ed. Goal**

##### **Clinical Competencies**

Personal and Civic Responsibilities

1. Participate as a member of the healthcare team.
2. Promote the Clinical Laboratory profession through displaying professional conduct and participating in awareness activities.
3. Participate in community volunteer activities such as Red Cross blood donor recruitment.

Written and Oral Communication

1. Maintain confidentiality of patient samples utilized and patient healthcare data.
2. Demonstrate respect for clinical staff during classroom and clinical assignments.
3. Utilize the Internet to interact with laboratory science students/staff through the Blackboard communication system and regular email programs.
4. Record test results following the appropriate procedure.
5. Recognize limitations of expertise during the performance of procedures and communicate with clinical staff when problems arise.

Information Literacy

1. Utilize the Internet and other library resources to effectively and ethically acquire information about specific topics as they relate to the field of Clinical Laboratory Science.
2. Apply knowledge gained from the clinical experience, lecture, laboratory, textbooks and internet to trouble shoot and problem solve laboratory results obtained during student laboratory.

Critical Analysis and Reasoning

1. Apply critical thinking skills to problems by utilizing clinical laboratory principles and theories to evaluate the validity of results obtained.
2. Interpret test results as normal or

	abnormal.
	3. Correlate test result data with clinical conditions.
Scientific and Quantitative Reasoning	1. Use fundamentals of scientific investigation and mathematical concepts to explain and solve problems in the clinical laboratory test procedures.
Technological Competency	1. Identify reagents and supplies needed for each lab, organize work so that the reagents, supplies, and equipment are utilized appropriately and work is completed within a reasonable time frame.
	2. Achieve competency in routine clinical laboratory procedures utilizing a variety of reagents, supplies, instrumentation and techniques.
	3. Utilize provided written procedures and verbal instruction to obtain appropriate information for performing and troubleshooting clinical laboratory procedures, and determining clinical significance and normal values.
	4. Use computers, the Internet, and the Blackboard system to access course materials and other relevant information.

## II. COURSE POLICIES

In addition to the college policies in the ACM Student Handbook regarding academic standards and student conduct, the clinical practicum has additional rules of compliance. These rules are outlined in this handbook. Students are expected to follow these procedures. A failure to abide by the policies can result in termination from a clinical site or termination from the MLT program.

If the student fails to achieve a 70% or C grade for any MLT course may result in dismissal from the Medical Laboratory Technology program. Refer to the MLT Academic Policies for further information.

### A. PLAGIARISM AND CHEATING POLICY

The "Policy Regarding Student Cheating" as stated in the Allegany College Student Handbook (2018-2019) will be followed in these courses.

### Scholastic Dishonesty

A student attending ACM assumes responsibility for conduct compatible with

the mission of the college as an education institution. Students have the responsibility to submit coursework that is the result of their own thought, research, or self-expression. Students must follow all instructions given by faculty or designated college representative when taking examinations, placement assessments, tests, quizzes, and evaluations. Actions constituting scholastic dishonesty include, but are not limited to, plagiarism, cheating, fabrication, collusion, and falsifying documents. Penalties for scholastic dishonesty will depend upon the nature of the violation and may range from lowering a grade on one assignment to failing the course and/or expulsion from the college.

Academic dishonesty such as, but not limited to, the following may result in IMMEDIATE dismissal from the MLT program and withdrawal from all MLT courses. If the withdrawal date has passed the student will be given a “D” for each course.

1. Submitting homework assignments copied from others. Both the student and the student that the material was borrowed from will receive a “0” for the assignment and may be subject to the Academic Dishonesty Process and dismissal from the program.
2. Falsifying laboratory results.
3. Printing out examinations and copying to give to other students
4. Cheating on examination.

#### **B. ACM FACULTY COMMUNICATION**

The student.allegany.edu email will be the official email that MLT faculty will use to communicate with students as well as through Blackboard announcements. Please check your college email and Blackboard account often. Emails/texts to the instructors will be answered within 24 hours Monday through Friday when classes are in session and within 48 hours on weekends and breaks.

#### **C. CLINICAL FACULTY COMMUNICATION**

##### **Email**

The student.allegany.edu will be the official email that students will use to contact clinical personnel. Any email sent to clinic personnel should be copied to ACM faculty member, the MLT Program Director, the clinical site liaison and the appropriate clinical rotation supervisor so that all parties are informed in case someone is unavailable to address the message. All emails should be limited to professional conversations relevant to the clinical rotation and should be grammatically well written.

##### **Phone**

The phone numbers for clinical sites are also posted and will be used to notify the clinical site of the student’s tardiness or absence from clinical rotation.

### **III. COURSE REQUIREMENTS /ASSIGNMENTS**

**Instructional Methodology** - the instructional methods used in this course include the following:

- Lecture and Power Point Presentations

- Blackboard On-line Course System (quizzes, resources)
- Written Quizzes
- Laboratory Practice
- Internet Resources (Youtube, etc)
- Computer Programs (Medtraining.org and Medialabinc.net)

### **Time Commitment**

According to “Hints on How to Succeed in College Classes”

<http://tinyurl.com/n83tktx> you should budget your time per week for this 6 hour credit course as follows:

1. Reading textbook: 1 to 2 hours
2. Homework assignments: 3 to 6 hours
3. Time for review and test preparation: 3 to 6 hours
4. Total study time per week: 7 to 14 hours **PER WEEK**

### **Instructor Recommendations**

The clinical student should be prepared for a process of review different from other types of classes that the student may have previously taken. The student will need to review SOPs, lecture material from previous classes, and will have procedural notes taken during rotation to review.

A great way to prepare for each clinic session is to:

1. Review the rotation objectives.
2. Review the rotation schedule prior to the day to know what time to report and what is tentatively scheduled for the day.
3. Review appropriate notes from previous relevant lecture/lab coursework.
4. Write down questions that you have as you review the material.
5. Look the questions up in the required textbook or review the PowerPoint slides again.
6. If you are confused on a concept or principle, have your question(s) available to discuss during rotations or to ask of the ACM MLT faculty.
7. If you start to get lost in understanding the material, please don't wait to seek help. Make an appointment or email the ACM MLT faculty instructor as soon as possible.
8. Work on clinical quizzes and computer subscription programs regularly in order to reinforce the background information with what procedures are being performed in the rotation.

### **Preparation for Written Examinations**

Exam questions are created from the course objectives. One helpful way to study is create a study guide by writing or typing the objective and then record the information pertaining to that objective.

No one study strategy works for everyone, but the best approach is to be active and to make this a daily process. Keep up with assignments, review any lecture or lab session material within 24 hours of class or rotation and review it consistently in small increments. Studying the material in small increments more often as an on-going process will result in more effective learning than cramming for an examination. Devote 2-3 hours per week doing this review.

**College Mandatory Policies**

Allegany College of Maryland is required to inform prospective and current students of important College policies, including Non-Discrimination, Title IX, Clery Act, Heroin & Opioid, Drug and Alcohol Use, Academic Disabilities, FERPA, Accreditation, and Gainful Employment Disclosure. The link below will take you to the official college page with the current policies.

<https://allegany.edu/x3744.xml>

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\*Indicates the ACM – Clinical Site Liaison

## **MLT PROGRAM ADVISORY COMMITTEE**

The ACM MLT Program Advisory Committee meets at least twice a year. The committee members represent the tri-state laboratory community with practicing professionals, academic professionals, administrators, and a pathologist. The advisory committee provides valuable input into the program/curriculum to maintain current relevancy and effectiveness.

Current members are as follows:

Paul Barnard, MLS, Potomac Valley Hospital  
Deborah Bishop, MLS, Grant Memorial Hospital  
Wendy Miller, MT, Garrett Regional Medical Center  
Annette Godissart, MLS, UPMC-Bedford Memorial Hospital  
Jodi Kelly, MLS, Meritus Medical Laboratory  
Jennifer Kyner, MLS, Meritus Medical Laboratory  
Theresa Lankey, MLT, Western Maryland Regional Medical Center  
Vanessa Fabbri, Western Maryland Regional Medical Center  
Ed Rocker, MLS, Somerset Hospital  
Molly Saunders-Bloom, MLS, Allegany College of Maryland, Professor Emeritus  
Dr. Johnathan Walburn, M.D., Western Maryland Regional Medical Center  
Christina Campbell, MLS, JC Blair Memorial Hospital  
Jeffrey Seiple, MLS, Chambersburg Hospital  
Brooke Eacho, MLT, Gonzaga Interventional Pain Management  
Jonathan Adams, MLT, Meritus Medical Laboratory  
Sonya Reed, MLT, Children's Medical Group

## **MLT PROGRAM CLINICAL LIAISONS**

The ACM MLT Clinical Liaisons are employed by the clinical site and are an essential component of the students' clinical experience. These valued volunteers are a link between the MLT faculty and the clinical rotation site. They are responsible for:

- coordinating and ensuring the effectiveness of clinical instruction at the site
- evaluating the effectiveness of clinical instruction
- monitoring and evaluating students' clinical performance and
- maintaining effective communication with the program director.

The current liaisons for our clinical sites are as follows:

WMRMC: Theresa Lankey  
Meritus Health System: Jodi Kelly and Jennifer Kyner  
UPMC-Bedford Memorial: Annette Godissart  
Somerset Hospital: Ed Rocker  
Grant Regional Medical Center: Deborah Bishop  
Garrett Regional Medical Center: Wendy Miller  
J. C. Blair Memorial Hospital: Christina Campbell  
Chambersburg Hospital: Jeffrey Seiple  
Gonzaga Interventional Pain Management: Brooke Eacho

## ACADEMIC CALENDAR

### MEDICAL LABORATORY TECHNOLOGY 207/208/210 Clinical Practicum 2018-2019

#### **FALL SEMESTER 2018**

August 20, 2018	Classes Begin
August 21, 2018	Clinical Practicum 207 or 208 begins
September 3, 2018	<b>Labor Day – College Closed</b>
October 15-16, 2018	<b>Fall Break – No Classes</b>
November 21, 2018	<b>No Classes</b>
November 22-23, 2018	<b>Thanksgiving – College Closed</b>
December 10, 2018	Fall Semester Ends after last class
December 14, 2018	Commencement
December 19-January 1	<b>College Closed</b>

#### **SPRING SEMESTER 2019**

January 14, 2019	Classes Begin
January 15, 2019	Clinical Practicum 207 or 208 begins
January 21, 2019	<b>Martin Luther King Day – No Classes</b>
March 11-March 15, 2019	<b>Spring Break: No Classes</b>
April 18-19, 2019	<b>College Closed</b>
May 8, 2019	Spring Semester Ends after last class
May 18, 2019	Commencement

#### **SUMMER SEMESTER 2019**

May 13, 2019	Clinical Practicum 210 begins
May 27, 2019	<b>Memorial Day: College Closed</b>
July 4, 2019	<b>Independence Holiday: College Closed</b>
July 5, 2019	No Classes
July 12, 2019	Summer Semester Ends (TBD)

**MEDICAL LABORATORY TECHNOLOGY PROGRAM**  
**ALLEGANY COLLEGE OF MARYLAND**  
**ESSENTIAL REQUIREMENTS**

## **INTRODUCTION**

The Associate of Applied Science Degree in Medical Laboratory Technology requires the acquisition of general knowledge and basic skills in all areas of the laboratory profession.

## **POLICY**

Faculty in the Medical Laboratory Technology Department have a responsibility for the welfare of the patients treated or otherwise affected by students enrolled in the Medical Laboratory Technology Program, as well as for the welfare of students in educational programs of the Department. In order to fulfill this responsibility, the Medical Laboratory Technology Department has established minimum essential requirements that must be met, with or without reasonable accommodation, in order to participate in the program and graduate. The Medical Laboratory Technology Department, as part of Allegany College of Maryland, is committed to the principle of equal opportunity. The Medical Laboratory Technology Department does not discriminate on the basis of race, color, creed, religion, national origin, gender, sexual orientation, age, marital status, disability, and disabled veteran or Vietnam era veteran status.

## **Program**

Admission and retention decisions for Medical Laboratory Technology are based not only on prior satisfactory academic achievement, but also on non-academic factors that serve to insure that the candidate can complete the essential requirements of the academic program for graduation. Essential requirements, as distinguished from academic standards, refer to those cognitive, physical, and behavioral abilities that are necessary for satisfactory completion of all aspects of the curriculum and for the development of professional attributes required by the faculty of all students at graduation. The following essential requirements have been developed in compliance with the Americans with Disabilities Act (PL101-336) and the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

The following essential functions or technical standards are intended to identify essential skills/knowledge/attitudes needed in the Medical Laboratory Technology curriculum at Allegany College of Maryland:

### **1.1. Communication Skills**

- 1.1.1. Communicate effectively in written and spoken English
- 1.1.2. Comprehend and respond to both formal and colloquial English
  - 1.1.2.1. Person to person
  - 1.1.2.2. By telephone
  - 1.1.2.3. In writing
- 1.1.3. Appropriately assess nonverbal and verbal communication

## **1.2. Large and small motor skills**

- 1.2.1. Move freely from one location to another in physical settings such as the clinical laboratory, patient care areas, corridors, and elevators
- 1.2.2. Possess sufficient eye-motor coordination to allow delicate manipulations of specimens, instruments, and tools
- 1.2.3. Grasp and release small objects (e.g., test tubes, pipette tips, microscope slides and coverslips); twist and turn dials/knobs (e.g., on microscopes, balances, centrifuges, spectrophotometers)
- 1.2.4. Manipulate other laboratory materials (e.g., reagents, manual and automated pipettes)

## **1.3. Other physical requirements**

- 1.3.1. Visual acuity
  - 1.3.1.1. Identify and distinguish objects macroscopically and microscopically
  - 1.3.1.2. Read charts, graphs, and instrument scales/readout devices
- 1.3.2. Lift and move objects of at least 20 pounds
- 1.3.3. Possess a sense of touch and temperature discrimination

## **1.4. Professional and application skills**

- 1.4.1. Follow written and verbal directions
- 1.4.2. Possess and apply mathematical skills
- 1.4.3. Work under time constraints
- 1.4.4. Prioritize requests and work concurrently on at least two different tasks
- 1.4.5. Maintain alertness and concentration during a normal work period
- 1.4.6. Apply knowledge, skills, and values learned from course work and life experiences to new situations
- 1.4.7. Work safely with potential chemical, radiologic, and biologic hazards using standard precautions

## **1.5. Valuing Skills**

- 1.5.1. Show respect for self and others
- 1.5.2. Project an image of professionalism including appearance, dress, and confidence

## **1.6. Stability**

- 1.6.1. Possess the psychological health required for full utilization of abilities
- 1.6.2. Recognize emergency situations and take appropriate actions

## **DRESS CODE FOR CLINICAL PRACTICE ON CAMPUS AND AT THE CLINICAL SITE**

Students are to purchase one or more set(s) of scrubs to wear during attendance in clinical courses.

1. The following dress code is required for clinical rotations. During clinical rotations, the student must also adhere to the dress code of the facility assigned to.
  - a. **Clothing:** Scrubs must be worn during clinical activities. Students will wear the representative uniform style and color chosen by the members of the class.
  - b. **Shoes:** Shoes must be clean, closed-toe and soft-soled, non-marking. Shoes need not be of a particular color but should be professional in appearance. White leather-type tennis or similar shoes are strongly recommended. Clogs, crocs or other types of shoes with no back or holes in the top are not allowed.
  - c. **Hair:** Hair must be clean, neat and of a *normal* hair color. If the hair's length is at or below the shoulder or if it has tendency to hang in the face it must be drawn back, such as in a clip or band.
  - d. **Head coverings:** Nothing shall be worn on the head (baseball cap, scarves, hats, etc.) unless it is of a required religious nature. If the head covering falls below the shoulders it must be tucked securely inside the lab coat to prevent contamination by blood and/or body fluids.
  - e. **Beards:** Male students must either shave regularly or if they choose to wear a mustache and/or beard, must keep them clean and well groomed.
  - f. **Hygiene:** Before attending clinical rotation, students must bathe regularly (i.e. daily) to avoid offensive odor. Students shall not use perfume, cologne or aftershave lotion. Conservatively applied makeup is permitted.
  - g. **Body Piercing/Tattoos:** No visible body piercings are allowed. Tattoos will be covered at all times in the clinical setting.
  - h. **Fingernails:** Fingernails must be kept clean and at a reasonable length. Reasonable length is defined as 1/8" above the fingertips. Artificial nails and nail jewelry are *not* to be worn. Clear or a professional color nail polish may be worn. Chipped nail polish is not permitted.
  - i. **Jewelry:** Jewelry should be limited to wedding rings and a wrist watch. A conservative necklace that is kept close to the skin (not dangling) and conservative earlobe earrings (no more than one pair) that do not extend more than 1/2 inch below the earlobe are acceptable.
  - j. **Identification:** During clinical assignments students must wear their ACM photo ID badge identifying them as an Allegany College of Maryland student. The badge must be visible at all times by clipping the badge onto the top of the scrub top or the lab coat. Badges **MAY NOT** be worn at or below waist level. Wearing the badge clipped to a lanyard is acceptable as long as it does not create a safety hazard or dangle into the workspace.

### **Notes**

1. Gum chewing is not permitted.
2. No form of tobacco usage is permitted in the clinical area, including snuff. An odor of tobacco on clothing is not acceptable.

## LABORATORY TIME SCHEDULES

The laboratory time schedule varies with each laboratory rotation. Each student will follow their **daily schedule** for the appropriate time to report. The following are general guidelines:

**STUDENTS ASSIGNED TO THESE RESPECTIVE CLINICAL AFFILIATES WILL BE GOVERNED BY THESE TIMES. THE STUDENT MUST BE AT THE ASSIGNED HOSPITAL AT THE TIME DESIGNATED ON THE DAILY ROTATION SCHEDULE. IF STUDENT IS UNABLE TO BE AT THE CLINICAL FACILITY AT THE DESIGNATED TIME, THE STUDENT IS TO CALL OR EMAIL THE APPROPRIATE PERSONNEL.**

### **Blood Bank**

The student will report to:

1. Western Maryland Regional Medical Center or the Allegany College student laboratory from 8:30 a.m.-3:30 p.m.
2. University of Pittsburgh Medical Center - Bedford Memorial from 7:00 a.m.-3:00 p.m.
3. Hagerstown Robinwood Center and Meritus Medical Laboratory – 7:00 a.m.-3:30 p.m.
4. Somerset Hospital – 7:30 a.m.-3:30 p.m.
5. Grant Memorial – 7:00 a.m.-3:00 p.m.
6. Garrett Regional Medical Center – 7:00 a.m.-3:00 p.m.
7. J.C. Blair Memorial Hospital – 7:00 a.m.-3:00 p.m.
8. Chambersburg Hospital – 7:00 a.m.-3:00 p.m.

### **Chemistry**

The student will report to:

1. Western Maryland Regional Medical Center – usually report at 7:00 a.m. Please check the daily rotation schedule for changes to the 7:00 a.m. starting time.
2. University of Pittsburgh Medical Center - Bedford Memorial from 7:00 a.m.-3:00 p.m.
3. Hagerstown Robinwood Center and Meritus Medical Laboratory – 7:00 a.m.-3:30 p.m.
4. Somerset Hospital – 7:30 a.m.-3:30 p.m.
5. Grant Memorial – 7:00 a.m.-3:00 p.m.
6. Garrett Regional Medical Center – 7:00 a.m.-3:00 p.m.
7. J.C. Blair Memorial Hospital – 7:00 a.m.-3:00 p.m.
8. Chambersburg Hospital – 7:00 a.m.-3:00 p.m.

### **Hematology**

Students will participate in 2 days of phlebotomy rotation--see daily rotation for starting times and location. The remaining time in Hematology will consist of some early morning draw:

1. 4:00 a.m. - 8:00 a.m. at the Western Maryland Regional Medical Center
2. 4:00 a.m. - 7:00 a.m. at the University of Pittsburgh Medical Center - Bedford Memorial. The student will report to the Hematology Department when phlebotomy is concluded.

**Exception:** Western Maryland Regional Medical Center students

report at 7:00 a.m. for a 2-day coagulation rotation.

3. Meritus Health Robinwood Professional Center  
Robinwood for two days of phlebotomy—Times are 7:00 a.m.-3:30 p.m. In the remaining days, the student should report to Robinwood Center and Meritus Medical Center Hospital for Hematology rotation 7:00 a.m.-3:00 p.m.
4. Somerset Hospital – 7:30 a.m.-3:30 p.m.
5. Grant Memorial – 7:00 a.m.-3:00 p.m.
6. Garrett Regional Medical Center – 7:00 a.m.-3:00 p.m.
7. J.C. Blair Memorial Hospital – 7:00 a.m.-3:00 p.m.
8. Chambersburg Hospital – 7:00 a.m.-3:00 p.m.

### **Microbiology**

The student will usually report to the serology/microbiology laboratory:

1. Western Maryland Regional Medical Center – 7:30 a.m.-2:30 p.m.
2. University of Pittsburgh Medical Center - Bedford Memorial from  
7:00 a.m.-3:00 p.m.
3. Hagerstown Robinwood Center and Meritus Medical Laboratory –  
7:00 a.m.-3:30 p.m.
4. Somerset Hospital – 7:30 a.m.-3:30 p.m.
5. Grant Memorial – 7:00 a.m.-3:00 p.m.
6. J.C. Blair Memorial Hospital – 7:00 a.m.-3:00 p.m.
7. Chambersburg Hospital – 7:00 a.m.-3:00 p.m.

## **RULES AND REGULATIONS FOR CLINICAL PRACTICE**

1. Complete health and background screenings as well as all titers and immunizations. A 2-step PPD is also required.
2. Following the dress code established for clinical rotation.
3. Regular and punctual attendance is required.
4. Complete all given assignments and tasks.
5. Follow established procedures when performing testing.
6. Successfully pass the written examinations and practicals for each rotation.
7. Demonstrate appropriate professional behavior as outlined in this handbook.
8. Purchase and use as required the clinical rotation tracking system for attendance and procedural competency documentation.
9. Complete the required professional development exercise prior to completion of MLT 208 or MLT 210, as appropriate.
10. Cell phones are not to be used at the clinical rotation site except on breaks.
11. Demonstrate respect for the clinical training staff.

Failure to abide by these rules and regulations may jeopardize the ability of a student to complete the MLT program.

## TRAJECSYS

You will use the Trajecsyst online clinical management and tracking system throughout your clinical rotations. Prior to beginning the clinical practicum portion of the program, you will visit <https://www.trajecsyst.com/> and create an account by clicking Register in the upper right hand corner. You will need to purchase access to the system for either less than 6 months (fast track rotations) or 6-12 months (two semesters of rotations). The cost for less than 6 months is \$75.00 and 6-12 months is \$100.00. You may pay this fee by either paying directly online via credit/debit card, check or money order or through the bookstore, purchased either outright or with financial aid.

The Trajecsyst system will be used to report your arrival and departure to/from clinic, recording your daily activities and experiences, housing all clinic documents, evaluations, competencies, posting announcements, communicating with clinic site personnel, along with other functions, as appropriate. When logging your arrival and departure to/from clinic, you may access the Trajecsyst system on a computer in the lab (if allowed) or from your personal mobile device.

You will have the ability to export a spreadsheet of your clinic activities. This will be useful to you when you are developing your resume and going to job interviews. You will be able to tell your future employers everything you have accomplished!

## ATTENDANCE POLICY

Regular and punctual attendance is **required**. The attendance policy for clinical rotations is much stricter than it is for regular college classes. Whether it is an on-campus clinical day or a clinical rotation site day, there is no tolerance of absence or tardiness. The student must notify the clinical faculty and the MLT faculty of any absence or tardiness. Phone numbers and email addresses are published in this document. The student should notify all parties as soon as possible – ideally before the student is scheduled to arrive but absolutely within 1 hour of the scheduled start time. Again, the student notifies both the clinical site and ACM faculty.

The student should call the respective supervisor first. If unable to reach the supervisor, the student should call the clinical liaison or the general lab number to provide notice of absence from clinical rotation. The student must also email the clinical supervisor and the MLT department faculty with notification of absence. The student must also complete and email the absence form to both the clinical supervisor and MLT department faculty.

Absences from or tardiness to clinical rotations for reason other than health or emergencies will not be tolerated. Students having excessive absences, tardiness or failure to notify of such absence or tardiness will be subjected to actions of the Behavioral Intervention Policy which may result in dismissal from the MLT Program. All absences, regardless of excuse, will be made up by the student. The student must coordinate the make-up time with ACM and clinical faculty.

The notification of absence form must be completed by the student, clinical instructor and ACM MLT Program Director

**ALLEGANY COLLEGE OF MARYLAND  
MEDICAL LABORATORY TECHNOLOGY**

**NOTIFICATION OF ABSENCE**

\_\_\_\_\_  
Student Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date(s) of Absence

\_\_\_\_\_  
Class Session(s) Missed

\_\_\_\_\_  
Clinical Hours Missed

\_\_\_\_\_  
Reason for Absence

I intend to make up my clinical hours on

\_\_\_\_\_

From \_\_\_\_\_ to \_\_\_\_\_.

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Clinical Instructor Signature

I have met with my class and/or clinical instructor and discussed the material I have missed. The following plan has been established for me to make up the coursework I missed:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Clinical Instructor Signature

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Program Director Signature

## SERVICE WORK POLICY AND STUDENT STATUS

MLT students are not expected to perform service work and are not permitted to be scheduled in place of qualified staff during any clinical rotation.

Students may be allowed to perform testing on patients, but only after demonstrating competence and under supervision of the clinical site staff.

If the student works at the clinical site as a paid employee, all working hours to be paid to the employee will be scheduled during non-instructional hours. No student scheduled for clinical rotation is to be concurrently working as an employee. Service work such as this is voluntary and occurs outside of rotation hours.

### PART-TIME WORK

Students are encouraged **not** to have part-time employment since this quite often interferes with academic performance. Allowances **cannot** be made in schedules to accommodate part-time employment.

### GRADING AND EVALUATION

1. Examinations covering practical as well as theoretical knowledge will be given at the end of each clinical rotation.
2. Announced/unannounced take home quizzes will be given during each clinical rotation and will be used to compute a portion of the final grade.
3. Written reports, if required, must be:
  - a. legible or typed
  - b. handed in on or before date due.
4. Students must demonstrate an adequate level of expertise determined by the supervisor in each clinical area; refer to student evaluation report for categories of expertise.
5. **Interim Student progress reports will be filled out by the respective clinical area supervisor or assigned staff. These reports will be given to students at the halfway point of each clinical rotation area and must be sent to the college MLT program instructors to be kept in the student's permanent file.** The student's strengths and weaknesses shall be documented. The report will be brief stating areas in need of improvement and ways in which improvement can be accomplished. These reports are to help the student be successful in their clinical rotation area.
6. A behavioral intervention form will be completed on any student with repeated absences or late arrivals to the clinical placement or other behavioral issues. This form will state areas in need of improvement and ways in which improvement must occur to successfully pass the Clinical Practice rotation course.

7. **A final clinical practicum report will be filled out by the supervisor of each area after students complete that particular section of the clinical rotation and sent to the college MLT program instructors to be kept in the student's permanent file.**
  - a. A conference to review practicum remarks will be held with each student at the end of each rotation by a member of the Department or clinical faculty responsible for the respective clinical area.
8. A grade of "P" must be obtained in each clinical area.
9. Please refer to specific area clinical evaluation reports for grading policies.

### CLINICAL PRACTICUM GRADE CALCULATION

Clinical Practicum Evaluation shall consist of the following:

**Quizzes:** Each rotation area will incorporate quizzes in some form (take home, announced, unannounced). *20% of Grade*

**Interim Evaluation Report:** Each student shall receive a progress report midway through their clinical rotation (sample report follows). *Non-graded*

**Practical:** Each area will have a final practical (practical formats are found at the end of each clinical section). A student must make at least 70% on the final practical. If 70% is not achieved, the student may be allowed to redo the practical. *20% of Grade*

**Final Evaluation Report:** Each student will receive a final evaluation of technical and professional performance which will be figured into the student overall clinical rotation grade. *30% of Grade*

**Final Examination:** A departmental final examination is given the last day of each clinical rotation. All clinic students will take the same examination. A few differences in the examination will occur to encompass differing hospital technology. A student must make at least 65% on the written comprehensive final. If 65% is not achieved, the student may be allowed to take an alternate examination. If the student fails to make 65% on the retake examination, the Student will be required to do remediation or repeat the clinical rotation. *30% of Grade*

## CLINICAL ROTATION EXPECTATIONS

An evaluation form or forms will be completed by each unit instructor in each rotation.

Below is a summary of the criteria and expectations of clinical students with regard to each criteria.

1. **Initiative**

If your work is completed, look for little things to do and do them. Supervisors appreciate individuals who will do this. If you have used up a reagent, see that there is more of it or if possible, prepare it. Clean up work benches and instruments. In short, make everything as you would like to see it. If you have the time, do more than the required number of procedures in the department. Volunteer to help the laboratory if the work load is exceptionally heavy and you have some free time.

2. **Reliability**

Know where the procedure manual is in each department and strictly adhere to the directions therein. Be honest and accurate in reporting your results. Results should be neatly and accurately recorded. If you have any reason to question a result, do not report it until you have checked with the teaching instructor or supervisor. If you find that you made an error, report it immediately; do not try to cover it up. Utilize the quality control procedure as a basis for any decision you may have to make. As long as you are students at the assigned hospital, you will be expected to abide by all the established personnel and other administrative policies that apply to you.

3. **Dependability**

Arrive in the laboratory a few minutes early and be ready to go. Do not take excessively long coffee and lunch breaks. Remember coffee breaks are a privilege, not a right -- don't abuse. Do not make appointments during your scheduled work hours unless it is absolutely necessary. Do not ask someone else to do your work for you unless it is absolutely necessary. Use common sense when problems occur. If an instrument is malfunctioning or there is some other type of problem, notify the teaching instructor or supervisor. Do not just ignore the situation. (If the instructor feels you are capable of solving the problem, he/she will let you know this. Plan your work to meet all ordinary and occasional unusual situations.)

4. **Personal Relationships**

Attempt to maintain a good working relationship with all members of the laboratory staff (students, technologists, instructors, and supervisors). Present good personal and professional appearance at all times. Accept instructions and constructive criticism from the instructors when they give you advice. Learn to develop a positive attitude about yourself and about others. Learn to develop self-confidence.

5. **Skills**

Interpersonal communication during clinical rotation shall be limited to discussion pertinent to clinical work! Consistently use good technique when performing laboratory tests. Check all your calculations very carefully and know how to derive the formula or factors you are utilizing. Record and report all your findings in a neat and orderly manner. Learn to coordinate your work activities so that you can do more than one test at a time. Know the theory involved in every procedure you do so that you can better understand the significance of normal and abnormal results. Learn to do basic trouble shooting and maintenance on each and every instrument you use.

**Any student found to be falsifying test results, misusing information, or cheating in any manner will be subject to automatic dismissal from the program.**

A copy of all grades and evaluation forms will be placed in the student's file maintained in the MLT Department.

### **CONFIDENTIALITY**

1. The student will refrain from disseminating any and all information of a confidential nature which shall be acquired while assigned to a clinical affiliate.

**Violation of confidentiality constitutes grounds for dismissal from the program.**

## **MLT ACADEMIC POLICIES FOR PROMOTION, FAILURE AND/OR DISMISSAL FROM THE PROGRAM**

1. Failure to achieve a final grade of a "C" in any lecture/laboratory Medical Laboratory Technology course may result in dismissal from the program since MLT courses are sequential. The Program Director will meet with each student to develop a revised completion plan.
2. Failure to achieve a "P" Pass in any clinical rotation course may result in dismissal from the program since MLT courses are sequential. The Program Director will meet with each student to develop a revised completion plan.
3. Medical Laboratory Technology grades are based on theory, campus laboratory, and clinical laboratory performance.
4. Lecture/Lab courses are graded "A" - "F" in the following manner:  
  
MLT Grading scale as follows:  
A ..... 90-100%  
B ..... 80-89%  
C ..... 70-79%  
D ..... 60-69%  
F ..... Below 60%
5. Clinical courses (MLT 207, 208, 210) are graded as Pass/Fail.
6. Unsatisfactory Performance Includes:
  - a. Withdrawal from a Medical Laboratory Technology course.
  - b. Change to audit status in a Medical Laboratory Technology course.
  - c. A grade of D, X or F.
7. Unsatisfactory performance in clinical laboratory, campus laboratory, or theory (grade lower than 70%) results in failure in a Medical Laboratory Technology course.
8. A student which fails one clinical rotation area must retake the rotation area with permission of the MLT Program Director. Student will register for the entire rotation course. Placement is subject to the availability of clinical sites.
9. If you miss a test, make appropriate arrangements for making it up before the next class period.
10. A student can only repeat (because of unsatisfactory performance) two Medical Laboratory Technology courses. A student may repeat (due to unsatisfactory performance) an individual Medical Laboratory Technology course one time only.
12. A student having to repeat clinical practice or take a clinical practicum out of sequence will be subject to availability of clinical placement sites. These students

will be placed in clinical sites which have available space.

12. If a student fails to achieve a passing grade in more than two Medical Laboratory Technology courses the student may be dismissed from the Medical Laboratory Technology curriculum. The student can reapply for admission into the Medical Laboratory Technology curriculum. The student must meet with the MLT Program Director to discuss withdraw or to create a new plan for program completion.
13. A student that fails an MLT course and wants to continue in the MLT Program will be subject to an academic review by the MLT Program Director. The Director, with input from MLT faculty members, will evaluate the professional behavior as well as academic and laboratory performance. The Director will meet with the student to discuss the reasons for the failing grade and recommend withdrawal from the MLT program or create a revised plan of program completion.
14. Medical Laboratory Technology courses are designed to be completed within four consecutive college semesters. This normal progression may be interrupted by a student's illness, the need to repeat a course, or other unforeseen circumstances. In order that continuity of the program is maintained, a maximum time limit of eight consecutive semesters (or four college years) will be allowed for completion of the program. Any student that may have a particular problem completing these courses within this time frame must be evaluated by the Director of the MLT program for determining a plan for program completion.
15. A student may withdraw due to poor academic performance, illness or personal reasons. Students who withdraw are not guaranteed readmission. If a student is readmitted, it may be delayed due to the availability of clinical facilities. (the Medical Laboratory Technology Readmission Policy is included in this handbook.)
16. A student can be dismissed from the MLT Program if the student violates HIPAA Federal Laws or displays conduct detrimental to the ethics of Medical Laboratory Technology.
17. Students will be asked to change majors if, at any time, emotional or physical health appears such that he or she cannot withstand the program in Medical Laboratory Technology.
18. The clinical affiliates have the right to not allow students to do clinical practice at their facility if the student does not adhere to clinical affiliate regulations. The student must realize that failure to adhere to hospital policy may jeopardize completion of a degree in Medical Laboratory Technology.
19. The student may utilize the ACM Academic Grievance Policy in the disposition of a grievance or complaint without fear of recrimination or retaliation.
20. Written Assignments/Examinations  
Written assignments must be submitted to the instructor on or before the due date.

They are to be neat, clean and legibly written. Evidence of cheating or plagiarism on examinations, quizzes, or written assignments will result in disciplinary action.

21. Scholastic Dishonesty

A student attending ACM assumes responsibility for conduct compatible with the mission of the college as an education institution. Students have the responsibility to submit coursework that is the result of their own thought, research, or self-expression. Students must follow all instructions given by faculty or designated college representative when taking examinations, placement assessments, tests, quizzes, and evaluations. Actions constituting scholastic dishonesty include, but are not limited to, plagiarism, cheating, fabrication, collusion, and falsifying documents. Penalties for scholastic dishonesty will depend upon the nature of the violation and may range from lowering a grade on one assignment to an “F” in the course and/or expulsion from the college.

Academic dishonesty such as, but not limited to, the following may result in IMMEDIATE dismissal from the MLT program and withdrawal from all MLT courses. If the withdrawal date has passed the student will be given a “D” for each course.

1. Submitting homework assignments copied from others. Both the student and the student that the material was borrowed from will receive a “0” for the assignment and may be subject to the Academic Dishonesty Process and dismissal from the program.
2. Falsifying laboratory results.
3. Printing out examinations and copying to give to other students.
4. Cheating on examination.

22. The ACM MLT program is an accredited program by the National Accrediting Agency for Clinical Laboratory Science (NAACLS). A student who satisfactorily completes the Allegany College of Maryland Medical Laboratory Program and graduates with an AAS, Associate of Applied Science, degree is eligible to take the American Society for Clinical Pathology (ASCP) Board of Certification (BOC) Examination after graduation. A student is not required to pass this external certification to graduate from the MLT curriculum.

## STUDENT HEALTH POLICY

Conditions in the clinical setting may include diseases and conditions that could have an impact on pregnancy in all stages, as well as other illnesses. Students are required to notify the program director immediately when pregnancy or illness is suspected or confirmed.

An updated health care provider's statement and/or physical is required when any changes in a student's current physical and/or mental status occurs that disrupts the student's ability to perform the "Allied Health Program's Essential Functions – Professional Technical Standards." The ability to perform these "Essential Functions" was signed when the admission physical exam was submitted upon admission to the MLT program.

A change in health status that may affect "Essential Functions" would include, but is not limited to a major illness, surgery, injury, pregnancy complications, birth of a child or hospitalization. The health care provider's statement must be provided before the student returns to the class/clinical setting. Students are expected to return able to perform "Essential Functions". A student may be required to complete another physical exam form.

Good communication with the faculty, clinical instructor and the MLT Program Director surrounding a change in health status is imperative to protect the welfare and safety of the student. It is advised that a student who has a change in health status consult their health care provider regarding limitations, if any, especially when working in areas of direct care in clinical agencies or work with hazards at any time in the program. **It is the student's responsibility** to provide whether or not there are any applicable restrictions and limitations from their health care provider to the course faculty, clinical instructor and MLT Program Director as a result of their health care condition. **If possible**, reasonable accommodations may be made that are responsive to the student's health condition.

## STEPS FOR CLINICAL ROTATION CHALLENGE

1. Request for Clinical Rotation Challenge must be submitted to the director of the Program six weeks prior to the beginning of clinical rotation.\*
2. Requests must be made in writing and are to include area(s) students wish to challenge and previous work experience in the areas to be challenged.
3. Clinical Rotation Challenge shall include: (2 steps)
  - a. A practical examination to establish the student's proficiency in the clinical challenge area - a minimum of 75% on this practical examination is required.
  - b. A written examination containing questions pertinent to the challenged area. A minimum of 75% on this written examination is required.
4. Both written and practical examinations must be completed two (2) weeks prior to the beginning of the clinical rotation.\*
5. Student(s) who successfully challenge(s) the clinical rotation is/are still required to register for Medical Laboratory Technology Clinical Rotation and pay fees to the Business Office for the credit hours earned.

## CAMPUS LABORATORY

1. Campus laboratory (AH251) will be available for practice when it is not being used for classes and the MLT faculty are available to supervise activity.
2. Street clothes may be worn except during clinical practicum rotation days. Apparel must be conservative and professional in nature. Shoes should be closed-toed. Long pants should be worn for laboratory.
3. Tattoos must be covered. Excessive jewelry and piercing will not be permitted due to safety concerns.
4. Students are expected to adhere to all safety and appearance guidelines when in the student laboratory. This includes using proper protective equipment such as wearing a lab coat, protective eyewear and gloves. A student not following the established policies will be asked to leave the classroom.
5. Students are to dispose of all biological fluids and sharps into properly labeled, puncture-resistant containers with lids and follow the exposure control plan for the AH251 campus laboratory.

## COMPUTER PROGRAM AND SUBSCRIPTION SERVICES

The Allegany College of Maryland Medical Laboratory Technology program subscribes to two online training and competency services that are utilized as a portion of the educational requirements and training of the students. These services are Medtraining Solutions and Media Lab Incorporated (referred to as MedTraining and MediaLab) found on the internet at <http://www.medtraining.org/> and <http://medialabinc.net/> respectively.

Each clinical practicum rotation includes tutorials and quizzes assigned from each of the services specific to the rotation area. A sample checklist is included in this handbook in each rotation section. However, as the services add and discontinue tutorials the list will change accordingly, therefore, please refer to the hard copy list provided to you with each rotation.

Successful completion of the tutorials requires a minimum of 70% competency achieved on the associated quizzes and competency assessment exercises. If a 70% is not achieved, the quiz/competency assessment must be retaken so that a 70% is achieved.

Simulation programs for urinalysis and hematology are available through MediaLab. The scores for the simulation program are included as part of the respective practical examinations.

Exam simulator is available for each rotation area and is to be used as a practice/rehearsal tool in prepping for the final written rotation examination.

A list of required computer programs is given for each rotation. The MLT computer programs are available on networked PCs located in the Allegany College of Maryland MLT classroom AH251 or on the 3 designated MLT computers in AH244.

Any CD-ROM computer programs are available for use in the Medical Laboratory Technology Allied Health Building Room AH251 and can be accessed through the college instructors or the Medical Laboratory Technology Administrative Assistant, Elaine Helmstetter, Room AH246. The programs are also located in AH244. This lab has 3 MLT designated computers with the MLT software loaded. Internet CAI subscriptions for student review are offered through Medtraining.org and Medialabinc.net. A password is required for these subscriptions. The password is available through the college Medical Laboratory Technology instructors.

**Prior to the start of Clinical Practice, the student will complete the following computer modules:**

**Medialabinc.net**

- Evidence-Based Practice Applied to Clinical Practice
- Laboratory Effectiveness: Clinical Laboratory Utilization
- Risk Management in the Clinical Laboratory
- Routine Venipuncture
- Dermal Puncture and Capillary Blood Collection
- Special Topics in Phlebotomy

## STUDENTS HEALTH AND LIABILITY ISSUES

Allegany College of Maryland does not have health care or hospitalization available to students. There is an umbrella liability insurance policy for students. This policy provides \$1,000,000 of excess liability coverage over the limits of the basic automobile, general, professional, and employees' liability policies. Also, \$3,000,000 primary liability is provided for those hazards not covered by basic policies subject to the exclusions of the policy and retention of \$10,000.

All students entering the clinical phase of the curriculum are required to have a physical examination no later than three months prior to clinical rotation. The examination consists of a personal health history and student physical examination. Required inoculations and vaccinations include:

- Tetanus-Diphtheria booster within the past 10 years
- MMR Vaccine (2 vaccinations or MMR titer)
- Varicella history and a varicella titer
- Proof of negative PPD
- Proof of either Hepatitis B vaccination, antibody testing revealing immunity to Hepatitis B, or declination of Hepatitis B vaccination.

Students enrolled in health training programs which involve clinical/practicum experiences are encouraged and expected to have their own personal health insurance. The college does not provide personal health insurance coverage for students.

Students entering health programs need to be aware by virtue of the clinical nature of the training that they may be exposed to infectious disease or processes and their inherent risks.

Students are referred to the Emergency Room for any accidents occurring while at the clinical site. Any medical expenses related to disease or injury incurred during training programs shall be the responsibility of the student and/or the student's third party health insurance.

## ACCIDENT PROCEDURES

### **Blood and Body Fluid Exposure**

Students who experience an exposure to any potentially infectious material (needle stick, mucous membrane, through non-intact skin, or airborne inhalation) require situation specific follow-up. It is the responsibility of the individual to report the incident to the instructor and seek medical evaluation/care as soon as possible (preferably within one hour).

1. First aid will be provided for the student sufficient to get the situation under control.
2. For a campus laboratory incident, notify the course instructor immediately.
3. For a clinical site incident, notify the immediate clinical supervisor, the clinical site liaison and the ACM MLT Program Director as soon as possible.
4. The student should report to the emergency room for follow-up evaluation/treatment.
5. The student will be responsible for the cost of this visit either by directly paying or through the billing of the student's personal health insurance.

## CRIMINAL BACKGROUND CHECKS

MLT students entering the clinical rotation component of the program must have a completed criminal background check on file by the college provider who performs such checks. If a student's criminal background check returns evidence of a felony criminal conviction or other serious charges that could result in a clinical affiliate denying clinical rotation access to that student, a review of the situation will be conducted by the program director. Students are advised in the MLT introduction class (MLT 101) that the majority of our clinical affiliates require evidence/validation of a criminal background check as per clinical affiliate/college contract agreements. If a student has a criminal history, the clinical affiliate has the right to deny that student access to its facility and the program must disclose such information to the affiliate and allow the affiliate the right to deny or approve access to said clinical affiliate. Failure to be placed in a clinical rotation would prevent the student from completing the MLT clinical program.

## **CLINICAL PRACTICUM GENERAL OBJECTIVES**

Knowledge of basic sciences and their application to clinical laboratory sciences.

The student must demonstrate a knowledge of biology, chemistry, physiology, and other basic sciences by being able to perform both manual techniques and complete automated techniques according to the norms of a quality controlled program.

The student should develop and demonstrate competency in:

1. collecting, processing, and analyzing biological specimens and other substances;
2. performing analytical tests of body fluids, cells, and other substances;
3. recognizing factors that affect procedures and results, and taking appropriate actions within predetermined limits when corrections are indicated;
4. monitoring quality control within predetermined limits;
5. performing preventive and corrective maintenance of equipment and instruments or referring to appropriate sources for repairs;
6. applying principles of safety;
7. respecting the confidentiality of all information obtained in the clinical laboratory and the hospital;
8. demonstrating professional conduct and interpersonal communication skills with patients, laboratory personnel, other health care professionals, and with the public;
9. recognizing the responsibilities of other laboratory and health care personnel and interacting with them with respect for their jobs and patient care;
10. applying basic scientific principles in learning new techniques and procedures;
11. relating laboratory findings to common disease processes;
12. recognizing and acting upon individual needs for continuing education as a function of growth and maintenance of professional competence.

## ALLEGANY COLLEGE OF MARYLAND

### AFFECTIVE OBJECTIVES

The following Affective (Professional Conduct) Objectives are a graded portion of all Medical Laboratory Technology didactic courses. One aspect of building a professional behavioral pattern is to be honest, dependable, reliable, and to demonstrate respect for other Allied Health professions.

The MLT Advisory Committee developed an instrument to evaluate professional attitude/responsibility characteristics displayed by the clinical student. The evaluation is based on the objectives below, but it is abbreviated on the actual clinical rotation evaluation instrument.

#### **1. Demonstrate dependability and initiative during technical coursework.**

- 1.1. Be punctual for classes.
- 1.2. Attend all scheduled classes.
- 1.3. Assist others when necessary.
- 1.4. Read assigned material prior to learning experience/arrived prepared for the class.
- 1.5. Complete assignments.
- 1.6. Comply with assignment deadlines.
- 1.7. Contribute to classroom discussions
- 1.8. Follow through on tasks.
- 1.9. Volunteer for extra assignments and projects.
- 1.10. Leaves work area clean and returns all supplies to appropriate place.
- 1.11. Strive to complete all assignments and tasks with competency.
- 1.12. Use only accepted laboratory techniques such as pipetting.
- 1.13. Investigate the accuracy of the results by double-checking values and calculations of values.

#### **2. Demonstrate respect for instructors, laboratory staff, and fellow students.**

- 2.1. Share equipment and supplies when necessary.
- 2.2. Respect the workspace of co-workers.
- 2.3. Confer with peers and instructors about questions on the material.

- 2.4. Maintain a good working relationship with students and instructors.
- 2.5. Obey the time schedule for assignments and breaks.
- 2.6. Accept constructive criticism.
- 3. Display proper communication skills.**
  - 3.1. Follow verbal instructions with minimal assistance.
  - 3.2. Ask when assistance is required.
  - 3.3. Maintain a professional nature of conversation.
  - 3.4. Exhibit good written communication skills.
- 4. Maintain honesty and integrity.**
  - 4.1. Report results in an accurate manner.
  - 4.2. Preserve the patient's right to confidentiality.
  - 4.3. Comply with the laboratory rules and regulations.
  - 4.4. Uphold academic integrity by following policies regarding cheating.
  - 4.5. Strive to be accountable for individual work.
  - 4.6. Respect the knowledge of the trainers.
- 5. Develop organizational skills which improve efficiency.**
  - 5.1. Adopt a strategy for organization of the workload.
  - 5.2. Demonstrate flexibility by adjusting to changes in the workflow/workload.
  - 5.3. Complete assignments in an organized manner.
  - 5.4. Coordinates work and activities to allow for the performance of multiple tasks.
- 6. Strive to display principles and practices of professional conduct.**
  - 6.1. Follow the guidelines for proper dress and appearance.
  - 6.2. Present a positive professional attitude when on duty.

## **Behavioral Intervention Clinical Practicum Policy**

This form will be utilized by the Clinical Area Supervisor to inform an MLT student of unsatisfactory behavior while at the Clinical Practicum site. This report should cite unprofessional behavior and improvement that needs to occur for a student to successfully complete the Clinical Practicum Rotation. The report form is found in the MLT Handbook on-line and must be sent to the MLT Program Director at [srohrbaugh@allegany.edu](mailto:srohrbaugh@allegany.edu). The report will be reviewed by the appropriate Medical Laboratory Technology student with the MLT program faculty.

The first offense will result in a counseling session between the MLT student and a MLT faculty member.

If a second offense occurs, the student will be issued a formal warning which will be placed in their student file. With this second offense the student will receive a prescriptive improvement plan noting time line for improvement and will be made aware that failure to comply with this plan will result in dismissal from the MLT program. (This will be documented by the MLT Program Director and signed by the student.) Failure to comply with the terms of the improvement plan will result in dismissal from the program.

A student can be readmitted to the program by filing a formal letter of appeal to the MLT Program Director. This letter must be presented to the MLT Program Director within 30 days after dismissal from the program. A committee made up of the MLT faculty will review the letter of appeal. A decision on whether to readmit the student will be made within 10 days of receipt of the letter. A student will only be readmitted following approval from the MLT Committee.

If the student is not satisfied with the decision made by the MLT faculty the student may follow the Academic Grievance Policy.

**Behavioral Intervention Form**

Student Name: \_\_\_\_\_

Clinical Area: \_\_\_\_\_

Clinical Supervisor: \_\_\_\_\_

Date: \_\_\_\_\_

Has been absent from clinic \_\_\_\_\_  
Dates

Has been late for clinical practice \_\_\_\_\_  
Dates

Other professional conduct violation: State violation and date of occurrence:

Documented meeting with student:

\_\_\_\_\_  
MLT Faculty Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Date

**BEHAVIORAL TERMINATION APPEAL FORM**

Student Name: \_\_\_\_\_

Date: \_\_\_\_\_  
(Must be filed within 30 days from date of termination.)

Phone Number: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Why are you appealing the decision: (check one)

- The decision was a mistake.
- The decision was based on inaccurate or incomplete information, and I can provide the correct information.
- The decision was correct, but I would like a second chance and can explain why.

Required for appeal form to be considered:

- Attach a copy of written decision you are appealing (e.g. termination letter).
- Describe the problem/situation that led to this decision. (All petitions).
- Describe why **you** think the committee should grant your request. (All petitions).

**I certify that all information provided in this petition and the supporting documentation are true and accurate. (Any false statements provided in writing (or at the hearing) could result in the denial of petition and disciplinary action.)**

\_\_\_\_\_  
Signature of Petitioner

\_\_\_\_\_  
Date

**FERPA RELEASE FORM**

I hereby consent to the release of information about my academic status and other information contained in educational records maintained by Allegany College of Maryland to all clinical affiliated institutions of the Allegany College of Maryland Medical Laboratory Technology Program, and to the administrative and professional staff of said clinical affiliate institutions who are in any way connected to the clinical training provided through the College's MLT Program. In providing this consent to the release of information, I recognize that I am waiving rights I may have under State and Federal privacy laws.

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Student's Signature

\_\_\_\_\_  
Date

# ***SAMPLE***

## ***INTERIM CLINICAL PRACTICUM EVALUATION***

This evaluation will be utilized by the Clinical student to assess his/her mid-term progress in the Clinical practicum rotation. Please check the appropriate choice for each item. If the selected clinical Medical Laboratory Technology student needs to improve, please list area(s) in need of improvement and ways to achieve the improvement goal. The interim report will be reviewed with the appropriate Medical Laboratory Technology student by the Medical Laboratory Technology faculty.

## INTERIM CLINICAL PRACTICUM EVALUATION

Student Name \_\_\_\_\_

Clinical Area \_\_\_\_\_

Date \_\_\_\_\_

Clinical Supervisor \_\_\_\_\_

	Progressing Satisfactorily	Needs Improvement
<b>MLT GOAL #1:</b> Students will competently perform routine clinical laboratory tests.		
<b>MLT GOAL #2:</b> Students will possess the professional attitudes and behaviors critical to being a valued member of the healthcare/ workplace team.		

Suggestions for ways to achieve improvement:

Failure to improve the performance as stated in the above plan may result in the student receiving an unsatisfactory clinical rotation grade.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

# MLT 208/210

## Professional Development Requirement

### Objectives of this exercise:

- Describe the significance of continued education.
- Formulate an individualized strategy for studying and prepping for the certification examination.
- Identify the requirements to maintain certification.
- Describe the significance of allowing a certification to lapse.
- Formulate an individualized job search resume.
- Outline ways and strategies to gain relevant field employment.

### Part 1: Job Search

#### **Submit a Professional Resume**

In addition to usual resume information highlight: graduation date, ASCP BOC eligibility, LIS and instruments used during rotation

#### **Submit a Job Search Plan**

Outline strategies you intend to use and your plan to gain employment

### Part 2: Certification Plan

#### **How do you plan to study for certification exam?**

Outline a tentative study schedule and resources you will use

#### **Once certified, how do you keep your certification? What is required to maintain certification?**

What is your plan to meet those requirements?

#### **What is the significance of continuing professional education?**

#### **What steps must be taken if you allow your certification to lapse and how it can be reinstated?**

**CLINICAL  
PRACTICE  
OVERVIEWS  
AND  
ROTATION  
OBJECTIVES**

## **PHLEBOTOMY OBJECTIVES**

### **Medical Laboratory Technology Clinical Practice 207/208 or 210**

#### **General Phlebotomy Goals**

1. The student will gain an understanding of the duties of a clinical phlebotomist.
2. The student will receive practical experience and/or observe specimen collection techniques in the various clinical areas: medical/surgical, pediatrics, nursery, emergency treatment, intensive care, and outpatient.
3. The student will follow all the types of isolation techniques and the precautions which must be observed. The student will practice standard precautions in all phlebotomy situations.
4. The student will receive instructions regarding safety rules and regulations as applicable to a phlebotomist.

#### **Phlebotomy Technical Objectives**

1. Perform the following phlebotomy techniques.
  - A. venipuncture (adults) - REQUIRED
  - B. finger puncture (adults)
  - C. butterfly collection (adults)
2. Observe, when possible, the heel puncture procedures in the nursery, venipuncture procedures on children, venipuncture by butterfly collection and sweat chloride testing. The student is not required to perform these techniques.
3. Observe in-patient phlebotomy collections.
4. Select the proper collection tube or tubes from the laboratory requisition information for blood specimen collection including blood bank, hematology, chemistry, serology, and microbiology specimens.
5. Select the proper equipment needed for the phlebotomy procedure.
6. Practice standard precautions when exposed to blood and body fluids.
7. Dispose of contaminated waste including all sharps according to institutional guidelines.

## **Phlebotomy Evaluation and Requirements**

1. All students will have 3 days of scheduled phlebotomy experience:
  - a. Students in Phlebotomy rotation during the Hematology rotation will report for two phlebotomy experience days of outpatient phlebotomy experience at respective hospital outpatient drawing station. \*See daily rotation schedule for times and location.
  - b. Students in Phlebotomy rotation during the Chemistry rotation will report for one day of outpatient phlebotomy experience at the respective hospital outpatient drawing station. \*See daily rotation for time/location.
2. A checklist is provided to assist the student in tracking the various techniques performed, types of specimens collected and hospital area where techniques were performed.
3. All clinic students will complete the following Medialabinc.net programs prior to their first of clinical phlebotomy rotation day:
  - Routine Venipuncture
  - Dermal Puncture and Capillary Blood Collection
  - Special Topics in Phlebotomy
4. Competence in the area of phlebotomy will be measured by the following:
  - a. Practical performance. A student will complete at least fifteen (15) documented, successful adult venipunctures.
  - b. The student's completion of the MediaLab and Medtraining (phlebotomy) tutorials.

**PHLEBOTOMY ROTATION  
CHECK LIST**

**This checklist serves to guide the student and the staff phlebotomist as to the types of phlebotomy experiences that the student should perform or observe.**

	<u>Performed</u>	<u>Observed</u>
<b>A. Phlebotomy Technique</b>		
1. proper patient identification	_____	_____
2. venipuncture		
a. adult (15 minimum)	_____	_____
b. children (observe only)	_____	_____
3. finger puncture		
a. adult	_____	_____
b. children (observe only)	_____	_____
4. heel stick	_____	_____
5. butterfly collection	_____	_____
6. multiple tube collections	_____	_____
<b>B. Clinical Area Where Phlebotomy Was Performed or Observed (Check all appropriate areas)</b>		
1. medical/surgical	_____	_____
2. pediatrics	_____	_____
3. nursery	_____	_____
4. emergency treatment	_____	_____
5. intensive care	_____	_____
6. outpatient	_____	_____
<b>C. Collection Tube Used (Check any used)</b>		
1. red top	_____	_____
2. serum separator tube	_____	_____
3. heparinized tube	_____	_____
4. EDTA	_____	_____
5. sodium citrate tube	_____	_____
6. blood culture	_____	_____
7. plasma separator tube	_____	_____
<b>D. Tests for Which Blood is Collected (check all that apply)</b>		
	<u>Performed</u>	<u>Observed</u>
1. crossmatch	_____	_____
2. type/screen	_____	_____
3. protime or APTT	_____	_____

- |                        |       |       |
|------------------------|-------|-------|
| 4. CBC                 | _____ | _____ |
| 5. sedimentation rate  | _____ | _____ |
| 6. HbA <sub>1c</sub>   | _____ | _____ |
| 7. electrolytes        | _____ | _____ |
| 8. glucose             | _____ | _____ |
| 9. cardiac enzymes     | _____ | _____ |
| 10. therapeutic drugs  | _____ | _____ |
| 11. chemistry profile  | _____ | _____ |
| 12. RPR/serology tests | _____ | _____ |
| 13. mono spot          | _____ | _____ |
| 14. RA screen/titer    | _____ | _____ |
| 15. blood culture      | _____ | _____ |
| 16. ammonia levels     | _____ | _____ |
| 17. lactate level      | _____ | _____ |

**E. Urine Collection**

- |  |       |       |
|--|-------|-------|
| 1. Explain to patient how to collect a 24-hour collection  | _____ | _____ |
| 2. Explain to patient how to collect a clean catch urine   | _____ | _____ |
| 3. Explain to patient how to collect a routine urine plus transfer to BD vacutainer tubes if necessary | _____ | _____ |

**F. Throat Swab Culture Collection**

_____	_____
-------	-------

**G. Documentation**

	<u># Venipunctures</u>	<u>Butterfly Collections</u>	<u>Capillary Punctures</u>
Day #1 (Hematology Rotation)	_____	_____	_____
Day #2 (Hematology Rotation)	_____	_____	_____
Day #3 (Chemistry Rotation)	_____	_____	_____

The student is required to submit the Venipuncture Documentation Log with initials and signature of the Phlebotomy Supervisor to ACM faculty after completing the third day.





# **CHEMISTRY CLINICAL PRACTICE OVERVIEW**

## CHEMISTRY CLINICAL PRACTICE OVERVIEW

The Chemistry clinical rotation is fourteen (14) days. Day 1 of the rotation is spent at Allegany College of Maryland doing Computer Aided Instruction review (see sample daily schedule which follows.) Days 2-13 are spent in the clinical affiliate chemistry laboratory section using the automated equipment. One of the days (2-13) will be an outpatient phlebotomy day. One day will also be scheduled at Gonzaga Pain Management to observe drug testing and mass spectrophotometry testing. Day 14 is spent at the college for a departmental examination and urinalysis practical. (This Medical Laboratory Technology Handbook has guidelines for the clinical practical in urinalysis.)

The Allegany College of Maryland Medical Laboratory students take Clinical Biochemistry (Medical Laboratory Technology 203) in the Fall of their sophomore year. Every effort is made to rotate students who have already had this course through the clinical chemistry rotation area first. It is possible that a clinical student could rotate through the clinical chemistry area of Clinical Practice while they are taking Clinical Biochemistry (Medical Laboratory Technology 203).

The student's Pass/Fail grade in Clinical Chemistry rotation is calculated based on the following:

### **Competencies (Skills and Knowledge)**

1. Evaluation (Technical and Professional Performance) 30%
2. Examinations, quizzes, and practicals derived in the following manner: 70%
  - 20% - Clinical Quiz Average and Successful Completion of CAI
  - 20% - Urinalysis Practical
  - 30% - Final Written Examination given by Medical Laboratory Technology Department

### **Clinical Site Responsibilities**

#### **Student Workload**

Students in the clinical chemistry section of Clinical Practice perform repeat automated testing on hospital patients under supervision. They are also given patient workloads to perform. This workload is performed under direct supervision of the technologist/technician in charge of the student.

#### 1. Automation

Students should be able to make decisions such as:

- Does the sample need repeated and are there instrument flags?
- What do the error codes mean?

- Does the sample meet criteria for critical values and if so, how should this be handled?
- How are samples verified?
- Location of QC specimens
- Is the QC within expected range?
- What happens when the instrument flags results or reagents (this is handled by technologist in charge of students, but student is expected to observe procedure)
- What alternate methods are available as backup?
- Procedural book location for chemistries performed on instrument

## 2. Electrophoresis

## 3. Urinalysis

Student should be able to make decisions such as:

- Does dipstick agree with the microscopic portion?
- Do the results need a confirming test?
- How sample is verified
- What procedure to follow if sample is to be rejected or quantity is not sufficient

## 4. Osmolality

## 5. HbA<sub>1c</sub>

## 6. Manual drug testing

## 7. BNP

### **Supervising Tech**

#### Daily Workload

The supervising tech for the day can be a Medical Laboratory Technologist or Medical Laboratory Technician. The student is responsible for being prepared and motivated for the day's activities. The supervising tech should direct the learning and oversee all work being done by the student. The supervising tech should have input into the student evaluation.

### **Clinical Supervisor**

In each of our clinical affiliates, the laboratory section supervisor or manager is the contact person for the college along with the clinical liaison. These individuals are responsible for assuring the mid-term and final evaluations are completed and forwarded to the department. Any tech can assume this responsibility, and it is this person supervising the student rotation in that section that is appointed as clinical faculty.

### **Practical Examination**

The practical examination format is found in the Medical Laboratory Technology

Handbook.

### **Evaluation Reports**

An evaluation of the student is to be filled out at the middle and end of the rotation. The interim evaluation report is simplified to give the student a report on progress and to identify areas of difficulty (See interim evaluation report in this Handbook.) The final evaluation report includes the technical and professional components. The technical and professional component is used to compute 30% of the student rotation grade. The report should be completed by the person in charge, although, input should be sought from those having direct contact with the student.

### **Quizzes and Exercises**

The program uses blackboard quizzes/and CAI Clinical Chemistry module quizzes to ensure the student adequately reviews the didactic material relevant to the rotation. The quizzes constitute 20%. The quizzes are given by the department. The student uses texts, notes, procedures, etc. as resources for the quizzes.

### **Written Examination**

A written, comprehensive examination is given by the department on the last day of the rotation. The test is taken at the Allegany College of Maryland campus. It counts as 30% of the final grade. A student must make at least 65% on the written comprehensive final. If the student fails to achieve a 65%, the student will be permitted to take an alternative examination. If 65% is not achieved on the second examination, MLT faculty will meet to decide if the student must repeat the rotation or do remediation and retake an alternate examination.

**CLINICAL ROTATION**  
**MEDICAL LABORATORY TECHNOLOGY 207/208/210**  
**CLINICAL CHEMISTRY ROTATION OBJECTIVES**

**I. Safety**

1. Use appropriate personal protective equipment at all times when working with patient samples.
2. Locate all fire extinguishers, eye wash stations and safety showers.
3. Locate Material Safety Data Sheets, chemicals carcinogens list, and hazardous chemicals list.
4. Handle and dispose of contaminated materials according to standard precautions.

**II. Specimen Preparation**

1. Comply with the standard operating procedure for specimen handling and distribution.
2. Accept only specimens that meet standard laboratory protocol.
3. Describe corrective measures for samples that are lipemic, icteric or contain paraproteins.
4. Describe corrective measures for samples that are rejected due to quantity not sufficient, hemolyzed, improper patient identification, improper tube collected, or a sample with a value over the linearity.
5. Perform or observe the specimen processing necessary to load an automated chemistry analyzer.

**III. Quality Control, Quality Assurance, Regulatory Issues**

1. Evaluate quality control results according to criteria established for each test.
2. Describe the various periodic (daily, weekly) maintenance routines for each piece of equipment used during clinical rotations.
3. Observe basic computer applications where relevant.
4. Document instrument maintenance and quality control.
5. Organize patient workload and manage time to complete task assignments in specific time allowed.
6. Report critical and discrepant results to clinical instructor/supervisor.
7. Follow the confidentiality policy of the facility during testing procedures and reporting according to HIPAA guidelines.
8. Describe the process used to implement a new lot number of control material.
9. Accurately and legibly log in and maintain required records at all times.
10. Pipette accurately at all times.
11. Reconstitute control sera and standards with accuracy and reliability without direct supervision.
12. Perform quality assurance procedures for each test analysis and consistently maintain required documentation.

13. Evaluate quality control data, recognize out-of-control data and perform troubleshooting measures according to laboratory policies for all laboratory procedures.
14. Apply Westgard rules to quality control decisions, recognize out-of-control situations, and perform actions outlined in the SOP when these situations occur.
15. Determine and implement the course of action to be taken when delta checks are not correlated.
16. Recognize test results that need to be checked by repeat testing and those that are beyond the limits of linearity and perform procedures as defined by SOP when these occur.

#### **IV. Routine Daily Activities**

1. Perform clerical work including test logs, recording and reporting laboratory results with 95% accuracy.
2. Properly prepare reagents, calibrators, standards and controls for daily use
  - a. Recognize acceptability: expiration date, labeling, appearance, contamination
  - b. Select correct pipette and use correctly
3. Perform daily calibration and maintenance checks on chemistry instruments with 95% accuracy.
4. Operate automated and semi-automated analyzers utilizing appropriate quality control and obtaining reportable results.
  - a. Assemble reagents, standards, calibrators and controls
  - b. Prepare instrument for use
  - c. Verify that instrument is operating properly.
5. Prepare specimens for use in chemistry procedures, evaluating suitability for tests ordered:
  - a. Separating serum and cells in an appropriate manner.
  - b. Completely and accurately labeling transfer tubes prior to placing sample in the tube.
  - c. Assessing adequacy of sample for tests ordered.
  - d. Determine the effects of hemolysis, lipemia and icterus on results.
6. Recognize and act upon out-of-control results according to established laboratory protocol.
7. Prioritize samples based on urgency of test requests.
8. Identify abnormal, out of range and critical values and take appropriate action.
9. Prepare specimens for shipment to reference laboratories.
10. Perform chemistry procedures including daily start-up, calibration and quality control procedures.
  - a. Correctly follow written procedure.
  - b. Determine concentration of unknown samples and controls.
  - c. Maintaining controls with +/-2 standard deviations.
11. Describe the clinical significance, interfering substances and specimen requirements for routine clinical chemistry tests.

## V. Reference Ranges and Clinical Significance

1. Recognize reference ranges, therapeutic ranges, and critical values and perform procedures at all times that are required by the SOP when these occur.
2. Differentiate normal from abnormal chemistry results correlating abnormal values and associated disease states.
3. List the tests which comprise the following:
  - a. Complete Metabolic Panel (CMP)
  - b. Basic Metabolic Panel
  - c. Renal Function
  - d. Liver
  - e. Cardiac

## VI. Analytical Principle

1. Observe the sample path or flow in 2 instruments.
2. Discuss the theoretical principles for each analytical methodology.
3. Recognize common malfunctions of the instruments.
4. Recognize interfering substances for each procedure performed.
5. Describe the effect of interfering substances for each procedure performed.
6. Define the principles of the following methodologies:
  - a. End-point spectrophotometry
  - b. Kinetic spectrophotometry
  - c. Ion-selective electrodes
  - d. Osmometry
  - e. Electrophoresis
  - f. Chemiluminescence
  - g. Immunoassay
  - h. Fluorescent polarization
  - i. Immunofixation
  - j. Nephelometry
7. Classify clinical chemistry assays to their methodologies. (some assays are listed on the procedure checklist page)
8. Perform end-point chemistry analysis accurately on patient specimens using the automated chemistry analyzer.
9. Identify factors affecting enzymes kinetics.
10. Discuss special sample preparation and handling for tests such as ammonia and lactate.
11. Perform analysis of patient specimens by the ion-selective electrode and analyzer.
12. Perform or verify calibration or standardization of electrochemical method.
13. Recognize electrochemistry instrument problems and warnings and perform procedures to correct these problems.
14. Following instructor demonstration and using the electrochemistry instrument manual and maintenance manual, perform, with minimal supervision, maintenance and troubleshooting procedures assigned by the instructor.

15. Perform analysis of patient specimens by automated immunoassay analyzer.
16. Perform or verify calibration or standardization of immunoassay method.
17. Recognize instrument problems and warnings and perform procedures to correct problems on immunoassay analyzers.
18. Following instructor demonstration and using the immunoassay instrument manual and maintenance manual, perform, with minimal supervision, maintenance and troubleshooting procedures assigned by the instructor
19. State the principle of serum protein electrophoresis (SPE), the measurement of separated fractions, and procedures of identifying the five major protein fractions in the order in which they migrate on the electrophoresed agarose gel.
20. State the principle of densitometric quantitation of separated electrophoresis fractions.
21. Discuss/observe steps needed to prepare CSF and urine samples as well as other adaptations needed for protein electrophoresis of body fluids.
22. Correlate electrophoretic patterns of protein with disease states.
23. State the principle of the analysis of patient urine and serum specimens by osmometry.
24. Describe the calibration or standardization of the osmometry instrument.

## **VII. Clinical Chemistry Calculations**

1. Perform clinical chemistry calculations to include:
  - a. Specimen Dilutions
  - b. Morality
  - c. Normality
  - d. Anion Gap
  - e. Creatinine Clearance
  - f. LDL
  - g. % Solution
  - h. Serial Dilutions
  - i. Converting Metric Units

## **VIII. Urinalysis: Clinical Setting**

Upon completion of the clinical training session the student is expected to be able to:

1. Use the automated dipstick analyzer or yellow IRIS for the chemical and or microscopic urinalysis
2. Perform a routine urinalysis
3. Recognize incorrect dipstick readings
4. Perform a urinalysis microscopic examination
5. Identify cellular and formed elements in urinary sediment
6. Correlate disease states which relate to abnormal chemical or physical property results, and microscopic results
7. Recognize discrepancies in the dipstick and microscopic results
8. Understand how pH, handling of the specimen, and specific gravity, drugs (etc.) will affect urinalysis results.

**The procedures which will be performed during the clinical chemistry rotation are as follows:**

- Chem panels \_\_\_\_\_
- Drugs \_\_\_\_\_
- Troponin \_\_\_\_\_
- CK-MB \_\_\_\_\_
- Protein Electrophoresis and Immunoelectrophoresis \_\_\_\_\_
- Hormones \_\_\_\_\_
- Osmolality \_\_\_\_\_
- Urinalysis \_\_\_\_\_
- Tumor Markers \_\_\_\_\_
- Fertility Studies \_\_\_\_\_
- Hemoglobin A1C \_\_\_\_\_
- Glucose Tolerance Test \_\_\_\_\_
- Anemia Tests \_\_\_\_\_
- B<sub>12</sub>/Folate \_\_\_\_\_
- Iron/Ferritin \_\_\_\_\_
- Specimen preparation \_\_\_\_\_
- Reagent preparation \_\_\_\_\_
- Lab calculations review \_\_\_\_\_
- Quality control review \_\_\_\_\_

Final will include digital image test of CAP and urinalysis slides and performance of complete urinalysis.

## Evaluation and Requirements for Clinical Chemistry

- a. Achievement of the goals and objectives in chemistry will be measured by the following:
- (1) Daily observation of student performance by staff technologists, technicians, and supervisor for mastery of objectives.
  - (2) Satisfactory completion of assigned CAI for chemistry.
  - (3) Completion of supplemental urinalysis and chemistry questions.
  - (4) Achievement of satisfactory practical performance of chemistry and urinalysis procedures evaluated by supervisory clinical personnel.
  - (5) Completion of 30 Urinalysis Case Simulations.
  - (7) Urinalysis practical - satisfactory performance.  
5 complete urinalyses in 1 hour  
25 laser disc image identification
  - (8) A written comprehensive clinical chemistry examination given by the Medical Laboratory Technology Department.
  - (9) A student who fails to achieve a 70% overall in any clinical rotation area must reapply to retake the specific clinical area in which an unsatisfactory grade has been obtained. Refer to Medical Laboratory Technology readmission policy. The student may proceed with their assigned clinical rotation schedule and need only reapply to repeat the deficient area.
- b. Students will receive an interim evaluation at the middle of the rotation. This progress report will be completed by the clinical supervisor. Any Deficiencies will be brought to the attention of ACM faculty and be addressed by the student with the support of ACM faculty and the clinical supervisor.

**Digital Images and Laser Disc Images can be utilized throughout the rotation at the Allegany College of Maryland Campus.**

**MediaLab Urinalysis Case Simulation:** This is a great resource for practicing urinalysis – including microscopic evaluation! You will perform the 30 Urinalysis Case Simulations then compare your results with the experts. The simulation sessions will be included as part of the final rotation grade.

1. 30 urinalysis case simulations on Medialabinc.net will be assigned at the beginning of the rotation to be completed prior to the practical.

2. You will complete all 30 case simulations prior to the final rotation day, comparing results with the expert analysis while listening to the expert interpretation of the case.

Watch the introductory video under the “Tutorial” tab when you open the first case.

### **Indicators of Achievement**

Students must achieve an overall 70% to pass the rotation. Achievement of 70% will be awarded in the following manner:

- 30% Technical and Professional Performance
  - Filled out by the supervisor in charge of the students chemistry rotation.
- 20% Quizzes and CAI Exercises
  - Series of take home exercises and assigned CAI.
  - 30 Urinalysis Case Simulations
- 30% Written Final Examination

Comprehensive exam given by the ACM Medical laboratory department. A student must make at least a 65% on the written comprehensive final. If a 65% is not achieved, the student must take an alternative examination. If 65% is not achieved on a second exam, the student will be required to do remediation or to repeat the entire clinical rotation as determined by the MLT Program Director in consultation with program and clinical faculty.
- 20% Practical Examination
  - Five complete urinalyses performed in one hour (see format for practical which follows)
  - 25 laser disc urine microscopic images to identify

\*\* A total of 70% must be achieved on both parts of the practical. If a 70% is not achieved, the student will be able to repeat the practical one time. Failure to achieve a 70% on a 2<sup>nd</sup> practical will result in failure of the clinical chemistry rotation.

## COMPUTER AIDED INSTRUCTION FOR CLINICAL CHEMISTRY

Required CAI for Chemistry rotation:

CD-ROM

Clinical Chemistry ASCLS – 6 Review Modules

Pharmacogenomics ASCLS

Chemistry/Urinalysis/Math Rotation

Medialabinc.net

<b>Chemistry/Urinalysis/Math</b>	<b>Completed</b>	<b>Score %</b>
Advances in Noninvasive Prenatal Testing for Down Syndrome and other Trisomies		
Cardiac Biomarkers		
Cerebrospinal Fluid		
Chemical Screening of Urine by Reagent Strip		
Descriptive Statistics		
Detection and Management of Pre-eclampsia: Current Laboratory Testing and Emerging Biomarkers		
Diabetes: Diagnosis, Laboratory Testing, and the Current American Diabetes Association Guidelines		
Drug Metabolism		
Drug Testing Methods in the Clinical Toxicology Laboratory		
Electrophoresis		
Intro to Quality Control		
Laboratory Assessment of Thyroid Function		
Laboratory Diagnosis of Cystic Fibrosis		
Laboratory Methods to Aid in Detection of Sepsis		
Linear Regression Analysis		
Metabolic Syndrome		
Pharmacology in the Clinical Lab: Therapeutic Drug Monitoring and Pharmacogenomics		
Quality Control		
Semen Analysis		
The Toxicology Laboratory's Role in Pain Management		
The Urine Microscopic: Microscopic Analysis of Urine Sediment		
Tumor Markers		

Medtraining.org

<b>Chemistry/Urinalysis/Math</b>	<b>Completed</b>	<b>Score %</b>
<b>Training Library</b>		
Cardiac Markers		
Introduction to Quality Assurance		
Protein Electrophoresis		
Urinalysis		
<b>Competency Assessment</b>		
Chemistry		
Protein Electrophoresis		
Toxicology		
Urinalysis		

**MLT 207/208/210  
CLINICAL PRACTICE  
CLINICAL CHEMISTRY  
SAMPLE ROTATION SCHEDULE**

**STUDENTS: 1 or 2 students**

**Refer to the following daily schedule for times and places.**

<b>ROTATION <u>DAYS</u></b>		<b><u>SUPERVISOR</u></b>
<b>Day 1 8:30-2:00</b>	Report to Allegany College of Maryland for Computer Review Programs Clinical Chemistry and Pharmacogenomics Modules ASCLS Medialabinc.net Medtraining.org	AC instructor in-charge of clinical area
<b>2:00-3:00</b>	Urinalysis Review	
<b>Day 2 Report at 7:00 a.m.</b>	Outpatient Phlebotomy	Assigned Technician
<b>Day 3 &amp; 4</b>	Cx5 Fetal fibronectins Urinalysis (Clinitek)	Assigned Technician
<b>Day 5</b>	<u>LX 20</u> Chemistries Therapeutic drugs	Assigned Technician
<b>Day 6</b>	Osmolality Ionized Calcium Urinalysis (Yellow Iris)	Assigned Technician
<b>MID-ROTATION EVALUATION DUE</b>		
<b>Day 7</b>	Osmolality Ionized Calcium Urinalysis (Yellow Iris)	Assigned Technician
<b>Day 8</b>	Protein Electrophoresis Immunoelectrophoresis	Assigned Technician

**ROTATION  
DAYS**

**SUPERVISOR**

<b>Day 9</b>	A <sub>1</sub> C Immunoelectrophoresis Protein Electrophoresis	Assigned Technician
<b>Day 10</b>	Unicell <u>DXI - 800</u> Thyroids B-HCG Ferritin Anemia Tests Tumor Markers Fertility Studies	Assigned Technician
<b>Day 11</b>	Unicell <u>DXI - 800</u> Thyroids B-HCG Ferritin Anemia Tests Tumor Markers Fertility Studies	Assigned Technician
<b>Day 12</b>	DXC Chemistries Therapeutic drugs	Assigned Technician
<b>Day 13</b>	DXC Chemistries Therapeutic drugs	Assigned Technician
	Urinalysis Review	ACM instructor in charge of clinical area
<b>Day 14 1:00-3:00</b>	Chemistry Examination, 8:30-11:30 a.m. Urinalysis Practical	ACM instructor in charge of clinical area

- NOTE:**
- 1) An interim evaluation will be given to the student. This will be reviewed with the student by ACM-Clinical Chemistry instructor. This interim report is to provide feedback to the student(s) on their clinical rotation progress. Strengths and concerns will be discussed and if there are concerns, an improvement plan will be given to the student.**
  - 2) Quizzes will be assigned to the student the first rotation day. These quizzes are due four days before the final examination so that they can be graded and reviewed and by the student prior to the chemistry rotation final examination and practical.**
  - 3) The chemistry clinical rotation examination will be given the last day of the Clinical Practicum at the Allegany College of Maryland Room AH251.**

**MEDICAL LABORATORY TECHNOLOGY 207/208/210  
CLINICAL CHEMISTRY  
URINALYSIS PRACTICAL**

**THE URINALYSIS PRACTICAL WILL CONSIST OF THREE PARTS:**

- a) 5 complete urinalysis determinations (20 points each) completed in 1 hour
- b) 25 digital images of urinalysis sediment (25 points)

**PART A - 5 COMPLETE URINALYSIS DETERMINATIONS:**

1. Students in the chemistry rotation will practice complete urinalysis determinations for 1 1/2 days.
2. Five patient urines will be provided for each student.
3. Students will do a complete urinalysis to consist of:
  - a) clarity, color
  - b) chemical determinations
  - c) specific gravity
  - d) low power/high power microscopic examination of each urine.
4. Students will have one hour to complete this portion of the UA practical.
5. Part A will be worth a total of 100 points (each urine will be worth 20 points).
6. A minimum total average of 70% must be achieved on both parts of the urinalysis practical. If a 70% is not achieved, the student will be able to repeat the practical one time. Failure to achieve a 70% on a 2<sup>nd</sup> practical will result in failure of the clinical chemistry rotation.
7. Each urine will be graded using the following format:

<b>Criteria</b>	<b>100%</b>	<b>70%</b>	<b>50%</b>	<b>0</b>
dipstick interpretation 4 points	Timing correct Reactions correct	Timing good 1 result incorrect	2 results interpreted incorrectly	More than 2 results incorrectly interpreted
Color/lucidity 1 point	Correct results agree with technologist	Results acceptable did not agree with technologist	Interpretation of 1 result incorrect	Interpretation of both results incorrect
Lpf 5 point	Correct results	1 minor result missed	1 major result missed	> 1 major and 1 = minor result missed
HpF 10 points	Correct results	1 minor result missed	1 major result missed	> 1 major and 1 = minor result missed

This practical is timed. Each student is given five urines. Dipstick, color/lucidity and microscopic must be completed in 60 minutes.

## **PART B - LASER DISC SLIDES:**

1. Students will review digital microscopic urine elements images throughout the urinalysis rotation as part of the Chemistry rotation.
2. Mosby Laser disc slides are available at Allegany College of Maryland in Room AH251 for student review. These slides are on Laser disc entitled Urinary Sediment by Paul Ward. In addition, the student has access to digital images through the Medtraining.org and Medialabinc.net subscriptions as well as the Blackboard course site.
3. Twenty-five digital sediment images will make up the UA practical. Each student is given 25 digital images of urine sediment to identify. These digital images are taken from a laser disc atlas having 2080 total images. Grading consists of a total point score with 25 correct equal to 100%. Each number correct is divided by total possible for a score.
4. The total point count for this portion of the practical is 25 points (1 point each).

A minimum of 70% is required on the combined urinalysis practical, image identification and case simulations. The practical may be repeated one time to achieve a 70%. If the student does not achieve 70% on the second try, a committee will meet to decide if the student must do remediation or repeat the rotation.

Note: a maximum score that can be achieved on the repeat practical will be 80%.

ALLEGANY COLLEGE OF MARYLAND  
CUMBERLAND, MD

**Student Evaluation Report**  
**Clinical Chemistry**

The objectives assume the student has completed the organized classroom and associated laboratory experience.

Name \_\_\_\_\_ Date: From \_\_\_\_\_ to \_\_\_\_\_

Department \_\_\_\_\_

Instructor \_\_\_\_\_

Please make a qualifying statement when necessary; otherwise check appropriate number for evaluation.

- \_\_\_\_\_ 1. Unsatisfactory
- \_\_\_\_\_ 2. Needs improvement
- \_\_\_\_\_ 3. Average
- \_\_\_\_\_ 4. Above Average
- \_\_\_\_\_ 5. Excellent

Achievement in clinical practice courses is evaluated in areas:

- (I) Technical Performance
- (II) Professional Attitudes and
- (III) Technical Competencies (Skills and Knowledge) and
- (IV) Total Evaluation Grade
- (V) Total Clinic Rotation Grade

(I) **Technical Performance Evaluation**

The technical performance evaluation is to be completed by matching the student's general performance on each item with the rating that most closely describes their performance in comparison to an entry level technical employee. It is recognized that an entry level Medical Laboratory Technician might not be assigned every procedure and that proficiency and level of judgment will increase with experience.

(II) **Professional Attitude**

The ratings and comments in this section are designed to provide information and counseling to assist the student to achieve personal and professional improvements and for employment recommendations. The individual should be described without reference to others. For the purpose of calculation, a score of a 3 for any item will be equated to a 3.5 on a 5 point scale so that this equates to a 70% (average score). An average of the professional behavior evaluation will be calculated.

(III) **Technical Competencies (Skills and Knowledge)**

The clinical supervisor will evaluate each student's technical performance using the rating scale 1-5. For the purpose of calculation, a score of a 3 for any item will be equated to a 3.5 on a 5 point scale so that this equates to a 70% (average score). An average of the technical performance will be calculated.

(IV) **Total Evaluation Grade**

The Professional and Technical Performance Evaluation will be averaged together as a single evaluation score to constitute 30% of the overall clinical grade.

(V) **Total Clinic Grade**

The evaluation total will be averaged with a percent on written examinations (30% of clinical grade), practicals (20% of clinical grade), and quizzes (20% of clinical grade) for each clinical area and a combined percentage of 70% is needed to receive a passing grade (P) in each clinical rotation area. In addition, the student must achieve a 70% on the final chemistry practical.

## I. TECHNICAL PERFORMANCE EVALUATION

	1	2	3	4	5
<p><b>MLT GOAL #1:</b>  <b>Students will competently perform routine clinical laboratory tests.</b></p> <p><i>(Does the student possess the attributes associated with this MLT goal? Please evaluate the student performance related to the main goal and each of the more specific criteria attributing to the goal rating.)</i></p> <p><b>Student was able to:</b></p>					
<p><b>1. Perform the routine laboratory tests associated with the department accurately and efficiently.</b></p>					
<p>a. Demonstrate competence in performing test procedures.</p>					
Comments:					
<p>b. Consistently use good techniques when performing laboratory tests.</p>					
Comments:					
<p>c. Handle equipment appropriately with necessary precautions.</p>					
Comments:					
<p>d. Make progress in organization and speed from first to last part of the rotation.</p>					
Comments:					
<p>e. Exhibit evidence of procedural review and preparation for daily assignments.</p>					
Comments:					
<p>f. Demonstrate the ability to retain instruction on where to find materials and how to perform techniques.</p>					
Comments:					
<p>g. Accurately record results; write legible reports.</p>					
Comments:					

h. Express an understanding of testing principles.					
Comments:					
i. Complete assignments.					
Comments:					
j. Demonstrate appropriate safety practices.					
Comments:					
k. Demonstrate entry level knowledge and understanding related to this subject area.					
Comments:					
l. Adjust to change in work flow and procedures.					
Comments:					
m. Demonstrate the ability to multitask in order to progress through daily assignments.					
Comments:					
n. Verify patient identification throughout all phases of analysis.					
Comments:					
o. Comply with all HIPAA regulations.					
Comments:					
<b>2. Analyze diverse types of information to choose an appropriate course of action in order to perform laboratory tests and solve problems accurately and efficiently.</b>					
a. Recognize discrepancies in quality of results.					
Comments:					
b. Recognize expected results/normal values for the testing methods.					
Comments:					

c. Recognize abnormal and critical values and explain the procedures for verifying and reporting these results.					
Comments:					
d. Correlate abnormal results with patient conditions.					
Comments:					
e. Identify the acceptability of patient results based on the evaluation of quality control data.					
Comments:					

## II. PROFESSIONAL ATTITUDES EVALUATION

	1	2	3	4	5
<p><b>MLT GOAL #2:</b>  <b>Students will possess the professional attitudes and behaviors critical to being a valued member of the healthcare/ workplace team.</b></p> <p><i>(In your opinion, does the student possess the attributes associated with this MLT goal? Please evaluate the student performance related to the main goal and each of the more specific behaviors attributing to the goal rating.)</i></p>					
<p><b>RELATIONSHIPS/COMMUNICATION</b>  <b>Student was able to:</b></p>					
<p><b>1. Communicate effectively using professional interpersonal skills resulting in successful interactions with colleagues and patients.</b></p>					
Comments:					
<p>a. Work well and communicate appropriately with co-workers.</p>					
Comments:					
<p>b. Work well and communicate appropriately with supervisors.</p>					
Comments:					
<p>c. Respects the knowledge of the trainers.</p>					
Comments:					
<p>d. Student exhibits acceptable customer service skills.</p>					
Comments:					
<p><b>2. MLT students will behave in a manner consistent with standards of the laboratory profession.</b>  <b>Student was able to:</b></p>					
<p>a. Dress appropriately for the clinical laboratory and adhere to laboratory protocol for the use of PPE.</p>					

Comments:					
b. Follow established policies and procedures.					
Comments:					
c. Is punctual and at work station when required or directed to be there.					
Comments:					
d. Complete all required rotation days.					
Comments:					
e. Demonstrate ethical behavior.					
Comments:					
f. Demonstrate accountability (acknowledges mistakes and corrects when possible) and responsibility (completion of assigned tasks, no need of reminders).					
Comments:					
g. Show initiative to improve technical skills and exhibits interest in assigned tasks.					
Comments:					
h. Evaluate own actions critically.					
Comments:					
i. Ask advice of technologists and supervisors when needed.					
Comments:					
j. Demonstrate confidence of MLT knowledge and skills.					
Comments:					
k. When work is completed asks supervisor for something to do.					
Comments:					

l. Maintain clean work benches.					
Comments:					
m. Volunteer to help in lab if workload permits (i.e. answer phones)					
Comments:					

### III. COMPETENCIES (SKILLS AND KNOWLEDGE)

	Score	% of Final Grade
1. Evaluation (Technical and Professional Performance Evaluation)	_____	<u>30%</u>
2. Examinations, quizzes, and practicals derived in the following manner:	_____	<u>70%</u>
20% - Quiz Average		_____
20% - Final Practical (student must make a 70% on practical)		_____
30% - Final Written Examination A student must make a 65% on the written comprehensive final. If a 65% is not achieved, the student may be allowed to take an alternate examination. If the student fails to make a 65% on the retake examination, the student will be required to do remediation, or repeat the clinical rotation.		_____
		_____
		_____
		<u>          </u> (Total Score)

**OPEN RESPONSE**

1. Brief Evaluation - Give main strengths, weaknesses or problems encountered during clinical experience.
  
  
  
  
  
  
  
  
  
  
2. Suggestions for improving individual's performance.

**Summary**

The student must achieve a minimum of 70% on the criteria for section 1 and 2 under competencies. A student who fails to achieve a 70% overall in any clinical rotation area must reapply to retake the specific clinical area in which the unsatisfactory grade has been obtained (refer to Medical Laboratory Technology readmission policy). The student may proceed with their assigned clinical rotation schedules and need only reapply to repeat the deficient area.

Evaluated by \_\_\_\_\_ DATE \_\_\_\_\_  
Supervisor/Evaluator Signature

Students comments regarding appraisal and counseling activity.

Reviewed with student by \_\_\_\_\_ DATE \_\_\_\_\_  
Signature

\_\_\_\_\_  
Student Signature DATE \_\_\_\_\_

# **MICROBIOLOGY CLINICAL PRACTICE OVERVIEW**

## MICROBIOLOGY CLINICAL PRACTICE OVERVIEW

The Microbiology clinical rotation is fourteen (14) days. Day 1 is the preclinical day scheduled at Allegany College of Maryland doing Computer Aided Instruction review (see enclosed daily schedule). Days 2-3 of the rotation are serology days. Students observe serological testing and then after observation the student can perform serological tests with direct supervision. (See daily schedule for types of serology testing to be performed - if available at the clinical site.) Students spend days 4-13 processing specimens, observing the technologists reading culture plates, performing identification of organisms on practice cultures and unknown cultures, doing organism identification from blood cultures, and performing TB, fungal and parasitological identification. The student can work independently on practice and unknown cultures receiving help on both practice cultures and unknown cultures. The final practical unknown cultures are done independently and feedback is received on them when they are completed and turned in for grading. Day 14 is spent at the college taking a final examination and performing Computer Aided Reviews. The Allegany College of Maryland students have basic Microbiology and Clinical Microbiology prior to Clinical rotation. Clinical Parasitology, Virology, Mycology, Acid Fast bacilli, antimicrobial susceptibility, and automation in the microbiology laboratory are not covered until the last semester in the curriculum so most students do not have this clinical knowledge when they are doing microbiology rotation – but they have basic microbiology which touches on these areas.

The student's Pass/Fail grade is calculated based on the following:

### Competencies (Skills and Knowledge)

1. Evaluation  
(Technical and Professional Performance) 30%
2. Examinations, quizzes, and  
practicals derived in the following  
manner: 70%
  - 20% - Clinical Quiz Average and Successful Completion of  
Microbiology CAI
  - 20% - Final Practical
  - 30% - Final Written Examination given by  
Medical Laboratory Technology Department

### **Clinical Site Responsibilities**

The students in the Microbiology area perform plating of specimens, serological testing, and work-up of cultures that have been completed by the technicians in the microbiology area. Practice or unknown specimens simulated by the microbiology technologists or Allegany College of Maryland clinical instructors are also given to the students. Some time is spent observing reading of plates with the technologists. After observation students can work on practice and unknown cultures independently, asking for help in obtaining pure cultures and how to report organism(s) identified. The students have had clinical microbiology and are expected to have knowledge in how to identify the most commonly

observed organisms – Gram positive and negative cocci, Enterobacteriaceae, and the non-fermenters.

The number of rotation days has been reduced to a minimum of twelve (12) days but this requires efficiency of the days spent at the clinical site.

The student can work with any microbiology tech, there are no special degree requirements for training personnel.

1. Automation: The student should be able to make decisions such as:
  - What preliminary testing should be done to ID organism before automation
  - How to properly dilute sample for automation
  - Is the sample a pure culture?
  - Does the sample need repeated?
  - Does the ID and susceptibility testing check?
  - Do I need to run additional susceptibility testing?
2. Plating: The student should be able to make decisions such as:
  - Specimen plating requirements
  - Proper streaking techniques for isolated colonies
  - Proper handling of specimens received in micro department
3. Serology: The student should be able to make decisions such as:
  - QC required to report results
  - Results that need repeated
  - Does the sample meet criteria for test performance?
  - Which tests require send outs and how this is done
4. Reading plates: The student should be able to make decisions such as:
  - ID of different colonies on plates
  - What distinguishing microscopic features will aid in ID
  - How to get isolated colonies
  - What tests should be performed for initial ID
  - When to set up manual sensitivities
  - What QC must be performed
  - What QC organisms are used for which tests
  - Are reagents within acceptable outdates and how to reconstitute them
  - How to report colony counts on urines and quantitation of organisms from other sites
  - Institutions criteria for sample rejection
5. TB: The student should be able to make decisions such as:
  - What are the growth requirements of different Mycobacteria?
  - How does color of organism help in ID?
  - What tests will differentiate the Mycobacteria?

6. Mycology: The student should be able to make decisions such as:
  - Is the colony a yeast?
  - Is Germ tube testing appropriate?
  - Is there special media or stains that will help in identification?
  - What distinguishing microscopic features will aid in ID?
  
7. Parasitology: The student should be able to make decisions such as:
  - What processing of the specimen is appropriate
  - Which tests will be performed to identify the causative organism
  - Which tests require send outs and how this is done

### **Supervising Tech**

The supervising tech for the day can be a Medical Laboratory Technologist or Medical Laboratory Technician. The student is responsible for being prepared and motivated for the day's activities. The supervising tech should direct the learning. The supervising tech should have input into the student evaluation.

### **Clinical Supervisor**

In each of our clinical affiliates, the laboratory section supervisor or manager is the contact person for the college. This person is responsible for assuring the mid-term and final evaluations are completed and forwarded to the department. Any tech can assume this responsibility, and it is this person supervising the student rotation in that section that is appointed as clinical faculty.

### **Practical Examination**

The enclosed practical examination format explains the types of specimens given to students for their unknown graded practical. The practical examination is started at least one week prior to the final examination. Students in the microbiology rotation may need to spend additional time for identification of unknown cultures due to the fact that organisms take a certain amount of time to grow and react in the media. The student is made aware that extra time may be needed. The practical examination constitutes 20% of the final clinical average.

### **Evaluation Reports**

An evaluation of the student is to be filled out at the middle and end of the rotation. The interim evaluation report is simplified to give the student a report on progress and to identify areas of difficulty (see interim evaluation report in the Handbook.) The final evaluation report includes the technical and professional components. The technical and professional components are used to compute 30% of the student rotation grade. The report should be completed by the person in charge, although, input may be sought from those having direct contact with the student.

### **Quizzes and Exercises**

The program uses take home quizzes/exercises to ensure the student adequately reviews the didactic material relevant to the rotation. The quizzes and CAI constitute 20%. The quizzes are given by the department or the clinical supervisor. The student uses texts, notes, procedures, etc. as resources for the quizzes.

### **Written Examination**

A written, comprehensive examination is given by the department on the last day of the rotation. The test is taken at the Allegany College of Maryland campus. It counts as 30% of the final grade. A student must make at least a 65% on the written comprehensive final. If a 65% is not achieved, a committee will meet to decide if the student must repeat the rotation or do remediation and retake an alternate examination.

**CLINICAL ROTATION**  
**MEDICAL LABORATORY TECHNOLOGY 207/208/210**  
**OBJECTIVES – MICROBIOLOGY**

Computer Aided Instruction

- Review Microbiology through the use of the following computer aided instruction:
  - 1) Anaerobe Educator
  - 2) LWW's Organism Central
  - 3) Making Sense of Microbiology for the Generalist – CACMLE
  - 4) Microbiology – Wheel of Bacteriology – MediaLab, Inc.
  - 5) Microbiology Mystery Theater – CACMLE
  - 6) Miscellaneous Fastidious Gram Negative Bacilli – CACMLE
  - 7) Antimicrobial Susceptibility Testing - CDC
  
- Understand organism identification through the use of problem solving in “Germware” CD-ROM.
  
- Do assigned internet CAI on Medtraining and Medialab. Successfully complete unit tests with a minimum of 70% competency.
  
- Quizzes on Blackboard:
  - 1) Serology quiz
  - 2) Gram positive quiz
  - 3) Gram negative quiz
  - 4) Microbiology video instruction
  
- Other quizzes may be assigned as necessary by Clinical Faculty

**Clinical Performance Objectives in Microbiology and Serology**

Upon completion of the Microbiology/Serology clinical rotation the MLT student is expected to be able to:

**I. SEROLOGY**

1. Define the terms immunology, antigen, and antibody.
2. Explain the function of the immune system.
3. Describe the first line of defense, natural immunity, and adaptive immunity as body defense systems against microbial diseases.
4. Describe the principles of immunologic-serologic testing, including written procedural protocol, accuracy in testing and blood specimen preparation including the advantages/disadvantages of the procedures.
5. Perform, document, interpret, and explain serologic procedures to include, but not limited to, rapid Streptococcus kits, cold agglutinins, serologic test for syphilis (STS), Infectious mono, rotavirus, HIV, Hepatitis B, Hepatitis A, Hepatitis C, rubella, H. pylori, CMV, Influenza A & B, Varicella Antibody, Clostridium difficile, Anti-Nuclear Antibody (ANA)
6. Perform and report results of quality control explaining the rationale for performing the various types of QC.

## **II. MICROBIOLOGY**

### **A. SPECIMEN PROCESSING**

1. Apply the established procedures for obtaining or receiving specimens, including examination of requisitions and logging in of specimens if appropriate.
2. Differentiate between appropriate specimens for processing and those that should be rejected, including reason for the choice.
3. Identify and integrate reasons for choice of the appropriate media, atmospheric conditions, temperature, and length of incubation for culturing various types of specimens.
4. Explain and demonstrate the proper sterile and inoculation techniques for isolation of microorganisms.
5. Compare media selected for the cultures, whether standard, enriched, differential, or selective and identify what the medium contains and why it is used.
6. Demonstrate and explain standard precautions in handling bio-hazardous materials in the microbiology lab.
7. Review hazards that may be encountered and prevented in the microbiology lab.
8. Choose appropriate specimens for anaerobic cultures.
9. Evaluate correct methods for culture and transport of anaerobic specimens.
10. Evaluate correct collection and handling of samples for virology cultures/testing, if applicable.

### **B. QUALITY CONTROL AND QUALITY ASSURANCE**

1. Perform and report results of quality control explaining the rationale for performing the various types of QC.
2. Use CLSI guidelines for quality control in microbiology to determine compliance.
3. Detect instrument malfunctions.

### **C. TESTING CONCEPTS AND PROCEDURES**

1. Perform, document, interpret and describe staining procedures used in a microbiology laboratory.
2. Interpret and compare results of direct gram stain procedures, including cellular and bacterial morphology, and blood culture stains.
3. Interpret and evaluate results of sputum screens for culture, including the purpose of these screens.
4. Evaluate methods that may be used to isolate organisms in multiple organism cultures to obtain pure cultures.
5. Evaluate aerobic cultures and determine what constitutes normal flora and potential pathogens from various sources and types of specimens.
6. Perform and evaluate methods of colony counts and identification procedures on urine cultures and explain the significance of results obtained.
7. Perform, document, interpret and describe identification of gram negative organisms.

8. Perform, document, interpret and describe identification of gram positive organisms.
9. Explain the importance of reporting the isolation and identification of clinically significant organisms to the proper professional(s).
10. Evaluate the appearance of colonies growing anaerobically on media used for primary isolation of anaerobes, and select appropriate identification testing.
11. Compare and contrast methods used for the identification of anaerobes.
12. Identify anaerobes that are considered endogenous and/or pathogenic by body site.
13. Describe appropriate identification techniques for *Clostridium difficile*.
14. Cite media and techniques used to grow and identify acid fast bacilli.
15. Perform specimen work upon practice unknown cultures from various body site.
16. Given a laboratory situation requiring screening tests, select the appropriate test to be performed.

#### **D. BLOOD CULTURES**

1. Explain the principles of the blood cultures instrument.
2. Describe how a positive blood culture is handled for rapid identification of the cause of the organism.
3. State proper blood culturing collection.

#### **E. ANTIMICROBIAL SUSCEPTIBILITY**

1. Use CLSI guidelines on susceptibility testing to ensure compliance.
2. Compare and contrast disk diffusion, MIC, and MBC methods for susceptibility testing, where applicable.
3. Select the appropriate method for susceptibility testing considering the type and origin of the organism.
4. Observe, perform, and evaluate results of automated methods for susceptibility testing.
5. Evaluate causes of development of antibiotic resistance.
6. Evaluate mechanisms of antibiotic action on the bacteria.
7. Evaluate antibiotic susceptibility and appropriate reporting of susceptibility testing for infections caused by specific types of organisms.

#### **F. Reference Laboratory Send-Out**

1. Using reference laboratory procedure manuals, process specimens for transport, where applicable.

### **OPTIONAL PROCEDURES (as available at the clinical site)**

#### **G. MYCOBACTERIOLOGY**

1. Describe the principle of and perform the concentration-digestion and decontamination methods for acid-fast organisms.
2. Choose appropriate media, incubation conditions, and length of time for growth of the commonly occurring mycobacteria.
3. Compare and contrast acid-fast (such as Kinyoun) and fluorescent staining techniques.

4. Perform and interpret acid-fast and/or fluorescent staining for Mycobacteria.
5. Compare grouping of Mycobacteria other than tuberculosis (MOTT) and tuberculosis to determine relationships.

## H. PARASITOLOGY

1. State the principle of the formalin/ethyl acetate concentration method for specimen processing and explain the sources of error and limitations.
2. Describe a proper collection technique for pinworms to optimize recovery of the organism.
3. Perform a concentration procedure to prepare a specimen for ova and parasite examination.
4. Prepare and examine wet preps for Ova and Parasites.
5. Prepare and examine smears for blood and tissue parasites.
6. Prepare and examine special stains for Cryptosporidium and Cyclospora.
7. Compare and contrast staining procedures for malaria and other parasites found in blood or body fluids.

## I. MYCOLOGY

1. Identify fungi in slide culture, wet preps, LPCB preparations, or from pictures, slides or other representations.
2. Compare and contrast commercial yeast identification methods.
3. Identify and state the principle of basic tests used to identify fungi and yeasts.

## J. VIROLOGY

1. Apply established procedures for obtaining or receiving specimens, including examination of requisitions and logging in of specimens.
2. Differentiate between appropriate specimens for processing and those that should be rejected, including reason for the choice.
3. Identify and integrate reasons for choice of the appropriate media, atmospheric conditions, temperature, and length of incubation for culturing various types of specimens.
4. Compare and contrast principles of basic, standard procedures for identification of common viruses.
5. Evaluate cytopathic effects caused by different viruses.

The student will learn operation and in some cases trouble shooting of equipment in a microbiological laboratory.

### The equipment that will be used includes:

Automated microbiology organism ID instrument \_\_\_\_\_

Light microscope \_\_\_\_\_

37°C incubator \_\_\_\_\_

Fluorescent microscope (where appropriate) \_\_\_\_\_

CO<sub>2</sub> incubator \_\_\_\_\_

Centrifuge \_\_\_\_\_

Anaerobe system \_\_\_\_\_

Campylobactor (bags) \_\_\_\_\_

Biological safety cabinet \_\_\_\_\_

Blood culture system \_\_\_\_\_

Serology analyzers/tests \_\_\_\_\_

**The procedures which will be performed or observed include the following:**

**Microbiology Procedures**

Plating \_\_\_\_\_

Isolation of pure cultures \_\_\_\_\_

Gram stain \_\_\_\_\_

Differentiating Tests:

- a) Catalase \_\_\_\_\_
- b) Oxidase \_\_\_\_\_
- c) Hippurate \_\_\_\_\_
- d) Indole \_\_\_\_\_
- e) PYR \_\_\_\_\_
- f) Esculin \_\_\_\_\_
- g) Coagulase & Staphylococcus ID \_\_\_\_\_
- h) Streptococci grouping (Beta Strep) \_\_\_\_\_
- g) Bile Solubility for Pneumococcus \_\_\_\_\_

Grouping and typing of bacteria \_\_\_\_\_

Blood cultures \_\_\_\_\_

*Salmonella* typing sera \_\_\_\_\_

<i>Shigella</i> typing	_____
A/P and other discs ID	_____
X/V <i>Haemophilus</i>	_____
<i>Haemophilus/Neisseria</i> ID	_____
Automated identification instrument	_____
Compact rapid identification system such as API or Crystal	_____
Kirby Bauer	_____
Beta-lactamase Test (CEFINASE)	_____
Antimicrobial susceptibility	_____
Acid fast stains	_____
Fluorescent Stain for Mycobacteria	_____
<i>Candida albicans</i> screen test	_____
India ink	_____
Recording and reporting	_____
Quality control	_____
<i>Chlamydia</i> testing	_____
<b><u>Serology Procedures</u></b>	
Serological identification of microorganisms	_____
Mononucleosis test	_____
Streptococcal testing	_____
Influenza test	_____
Rotavirus	_____
RSV (Respiratory Syncytial Virus)	_____

Rubella	_____
HIV Testing	_____
Hepatitis Testing	_____
Viral send-outs	_____
Serological test for syphilis - RPR Qualitative and Quantitative	_____
<i>Clostridium difficile</i> Toxin - EIA	_____
Rheumatoid factors	_____
ANA	_____
FTA (Send Out)	_____

**Evaluation and Requirements for Clinical Microbiology/Serology.**

- A. Achievement of goals and objectives in Microbiology/Serology will be measured by the following:
  - (1) Daily observation of the student performance by staff technologists, technicians and supervisors for mastery of the objectives and satisfactory practice unknown identification.
  - (2) Practical performance – measured by daily observation of student by supervisor and satisfactory completion of a practical examination consisting of identification of organisms in three clinical specimens. (Instructions in Handbook)
  - (3) Satisfactory evaluation by supervisor on clinical practicum report.
  - (4) Completion of supplemental microbiology and serology take home quizzes and computer aided instruction.
  - (5) A written comprehensive Clinical Microbiology examination given by the Medical Laboratory Technology Department.

## **Indicators of Achievement**

Students must achieve an overall 70% to pass the rotation. Achievement of 70% will be awarded in the following manner:

- 30% ***Technical Performance Evaluation*** filled out by the supervisor in charge of the student's chemistry rotation.
- 20% ***Quizzes and Exercises*** – quizzes on blackboard which are graded, open-book exercises.
- 30% ***Written Final Comprehensive Examination*** - A student must make a minimum of 65% on the written comprehensive final. If a 65% is not achieved, the student must take a 2<sup>nd</sup> examination. If 65% is not achieved on a second exam, a committee will meet to decide if the student must repeat the rotation or do remediation.
- 20% ***Practical Examination*** – Students will receive three (3) clinical specimens for culture-workup (see format for practical)

### **Written Required Exercises:**

The Medical Laboratory Technology department will give three graded blackboard quizzes. These quizzes will be open book. CAI from Medtraining and Medialab must be completed with a minimum of 70% competency. (See CAI information for microbiology included in Handbook.)

**COMPUTER AIDED INSTRUCTION FOR CLINICAL PRACTICUM  
IN MICROBIOLOGY**

Microbiology/Serology Rotation

Medialabinc.net

<b>Microbiology/Serology</b>	<b>Completed</b>	<b>Score %</b>
Autoimmune Diseases and Antinuclear Antibody Testing: Methods and Staining Patterns		
Case Studies in Clinical Microbiology		
Drug-Resistant Superbugs, Multi-drug Resistant Organisms: MRSA, VRE, <i>Clostridium difficile</i> , and CRE		
Free-living Amoeba as Agents of Infection		
Fundamentals of Molecular Diagnostics		
HIV: Structure, Replication, and Detection		
Human Papillomavirus (HPV) and Molecular Diagnostic Testing		
Molecular Methods in Clinical Microbiology		
Mosquito-Borne Viral Diseases		
Mycology: Yeasts and Dimorphic Pathogens		
Overview of Prion Diseases		
PCR Fundamentals: Focus on Multiplex PCR Assay and the Advantages over Singleplex Assays		
Preliminary Identification of the Primary Select Agents of Bioterrorism		
Reading and Reporting Gram Stained Direct Smears		
Reading Gram Stained Smears from Cultures		
Real-Time PCR		
Respiratory Case Study: Possible Pertussis Infection		
Tickborne Diseases		

Medtraining.org

<b>Microbiology/Serology</b>	<b>Completed</b>	<b>Score %</b>
<b>Training Library</b>		
Laboratory Methods		
Anti-nuclear Antibody		
Crithidia		
ANCA		
Mouse Stomach Kidney		
Gram Stain		
Mycology – can be completed test day		
Parasitology – can be completed test day		
Vaginal Wet Prep		
<b>Competency Assessment</b>		
ANA		
ANCA		
Gram Stain		
Hepatitis and HIV Antibodies		
Microbiology		
MSK		

**MEDICAL LABORATORY TECHNOLOGY 207/208/210**  
**CLINICAL PRACTICE**  
**CLINICAL MICROBIOLOGY**  
**SAMPLE ROTATION SCHEDULE**

(Report to Clinical Microbiology site at time designated by the clinical site.)

<u>DAYS</u>	<u>ROTATION</u>	<u>SUPERVISOR</u>
Day 1	Allegany College of Maryland Campus AH251 9:00 a.m. to 3:30 p.m. Computer Programs – Making Sense of Microbiology for the Generalist (CD-ROM) Microbiology – Wheel of Bacteriology (CD-ROM) Microbiology Mystery Theater (CD-ROM) Miscellaneous Fastidious Gram Negative Bacilli (CD-ROM) Antimicrobial Susceptibility Testing (CD-ROM) Germ Ware (CD-ROM) Anaerobe Educator LWW’s Organism Control General Microbiology and Serology Medtraining and Medialabinc.net	Allegany College of Maryland Instructors
Day 2	<b>SEROLOGY</b> – Rapid Streptococcus Kit, cold agglutinins, STS, Streptozyne, Rotavirus Infectious Mononucleosis, Rheumatoid Factor, RSV, Rubella, Occult Blood, Fecal Leucocytes, etc. Set up cultures as time permits, observe reading of gram stains, TB, and Fungal Smears	Technician assigned to these tests
Day 3	<b>SEROLOGY</b> – Ova & parasites, including CAP materials, Clostridium difficile toxin, Chlamydiae and HIV Testing (repeat serology tests from previous clinic day), Set up cultures as time permits, observe reading of gram stains, TB, and Fungal Smears	Technician assigned to these tests tests
Day 4	Processing – Blood culture analyzer and work up, Shiga/CAMP Toxin, Plating Use of media, Gram Stain, processing fungal cultures.	
Day 5	Processing – Decontaminate, Affirm, India Ink, AFB Stains/Smears, Rotavirus, RSV, molecular testing	

<u>DAYS</u>	<u>ROTATION</u>	<u>SUPERVISOR</u>
Day 6	Observe the technologist during specimen work-up. Plate cultures under supervision. Look at fungal cultures, read sensitivities, identification of microorganisms from plates. Do confirmatory testing. <b>(Practice work-up of positive or gram negative organism.)</b>	Technician assigned to these areas
	<b>Interim Evaluation</b>	
Day 7	Observe the technologist during specimen work-up. Plate cultures under supervision. Look at fungal cultures, read sensitivities, identification of microorganisms from plates. Do confirmatory testing. <b>(Practice identification of gram positive or gram negative organism.)</b>	Technician assigned to these areas
Day 8	Observe the technologist during specimen work-up. Plate cultures under supervision. Look at fungal cultures, read sensitivities, identification of microorganisms from plates. Do confirmatory testing. <b>(Practice organism work-up of gram positive or gram negative organism.)</b>	Technician assigned to these areas
Day 9	Observe the technologist during specimen work-up. Plate cultures under supervision (as time permits). Look at fungal cultures, read sensitivities, identification of microorganisms from plates. Do confirmatory testing. <b>Students given 2-3 practice unknown cultures for specimen work-up to plate. These cultures are to be treated the same as cultures for unknown identification these are practice cultures and help can be solicited).</b>	Technician assigned to these areas
Day 10	Observe the technologist during specimen work-up. Plate cultures under supervision (as time permits). Work on unknown practice cultures can be done when regular workload is finished. This will include isolation of colonies, identification of organisms, confirmatory tests and sensitivities. Discussion with technologist as to proper techniques and steps to follow.	Technician assigned to these areas

<u>DAYS</u>	<u>ROTATION</u>	<u>SUPERVISOR</u>
Day 11	Observe the technologist during specimen work-up. Plate cultures under supervision (as time permits). Look at fungal cultures, read sensitivities, identification of micro-organisms from plates. Do confirmatory testing. <b>Students given 2-3 practice unknown cultures for specimen work-up to plate. These cultures are to be treated the same as cultures for unknown identification. These are practice cultures and help can be solicited.</b>	Technician assigned to these areas
Day 12	<b>Start Practical Exam</b> (format to be distributed to students by Allegany College of Maryland instructors after setting up practical.)	Technician assigned to these areas
Day 13	Observe the technologist during specimen work-up. Plate cultures under supervision (as time permits). Look at fungal cultures, read sensitivities, identification of micro-organisms from plates. Do confirmatory testing. Work on practical exam	Technician assigned to these areas
Day 14	Departmental <b>Final Examination</b> Allegany College of Maryland Campus – Room AH251 <b>9:00-11:00 a.m.</b>	Allegany College of Maryland Instructors
11:00 a.m. to 3:00 p.m.	Computer Program: Review of Microbiology area Practical results to be in by 3:30 p.m.	

**(Note: Work-up of practice or unknown cultures may require additional student hospital time. Please plan to spend additional time as needed.)**

**IMPORTANT NOTES**

A final examination will be given on Day 14 at Allegany College of Maryland campus, Room AH251, 9:00 – 11:00 a.m.

NOTE: 1) Students must review notes from Clinical Micro I on media, catalase, coagulase, oxidase, spot indole, gram positive cocci, gram negative cocci, gram negative enterobacteriaceae, nonfermentative gram negative bacilli and coccobacilli.

- 2) An interim evaluation will be given to the student. This will be reviewed with the student by the Microbiology ACM instructor. This interim report is to provide feedback to the student(s) on their clinical rotation progress. Strengths and concerns will be discussed and if there are concerns, an improvement plan will be given to the student.
- 3) Quizzes will be assigned to the student the first rotation day. These quizzes are due before the final examination so that they can be graded, reviewed and returned to the student prior to the microbiology rotation final examination and practical.

**MEDICAL LABORATORY TECHNOLOGY 207/208/210**  
**CLINICAL MICROBIOLOGY**  
**PRACTICAL EXAMINATION FORMAT**

Each student will receive (3) clinical specimens for culture workup. Culture #1 – Urine\*; Culture #2 – Sputum, BAL, Throat\*; Culture #3 – Wound, vaginal, or stool\*. The cultures will be plated or in broth.

The student will transfer the culture to media appropriate for the collection site, and be responsible for growing the culture under the appropriate atmospheric requirements.

After organisms have grown, the student will isolate each organism, identify the cultural isolates, and report the identification and reportable antibiotic regimen on the report form provided.

All automated results, procedural steps, additional testing must be shown on the report form.

The students will have **4-5 days** (from initial isolation) in which to identify their cultural unknowns.

These results will be given to the program instructor for grading. The grade will be derived in the following manner:

\*Mixed cultures with normal flora plus pathogens from these sites.

**MICROBIOLOGY UNKNOWN/MIXED SPECIMEN CULTURES  
MEDICAL LABORATORY TECHNOLOGY 207/208/210**

Name: \_\_\_\_\_ Course: \_\_\_\_\_ Date: \_\_\_\_\_

Criteria	100% of points	75% of points	50% of points	0% of points
Correct Media	All Media Correctly Chosen	1 Media Incorrect	2 media incorrect	> 2 Media Incorrect
Streaking technique	Good technique: Isolated colonial growth	Adequate technique: 3 <sup>rd</sup> streak colonies not completely isolated	1 plate not streaked correctly	Technique incorrect
Gram Stain Interpretation	Gram Stain reactions and morphology correct	Either Gram reaction or morphology incorrect: corrected	Gram stain morphology incorrect, was not corrected	Gram Stain not performed
Preliminary Tests (spot or kit)	All appropriate tests were performed	1 test was not performed or should not have been performed	2 tests not performed correctly	Wrong tests performed
Interpretation of preliminary tests	All tests interpreted correctly	Interpretation of 1 test incorrect	Interpretation of 2 tests incorrect	Interpretation of more than 2 tests incorrect
Vitek Microscan or Phoenix	Inoculated correctly	Not inoculated correctly but test rerun	Not inoculated correctly, rerun more than 1 time	Not inoculated correctly did not rerun
Vitek Microscan or Phoenix interpretation	Interpreted correctly; ID 85% or greater	ID less 85%; Ran back-up test	ID less 85%; did not run back up	Interpreted incorrectly; Did not run back-up test
Sensitivity	Interpreted correctly; Appropriate antibiotics	Interpreted correctly but did not need to run antibiotics	Incorrect interpretation; repeated work	Incorrect interpretation and use of antibiotic battery
Quantitation of organism	Quantitation correct	Quantitation of 1 organism incorrect	Quantitation of 2 organisms incorrect	Quantitation of more than 2 organisms incorrect; organisms were not correctly identified
Correct ID	Organism was correctly identified	Organism was not identified after 1 <sup>st</sup> try; has to repeat	Organism was not identified after 2 <sup>nd</sup> try; has to repeat	Organism not correctly identified

There may be more than one organism/culture. Criteria are applied for each organism.

Each section of the Microbiology Clinical Practical Rubric will be worth 10 points. Each organism in each culture will be graded separately using the Microbiology Rubric. A total maximum for all 3 cultures would be 300 points. If a culture has 2 unknown organisms, each unknown will be graded on a 100 point scale and the grades will be averaged (example urine unknown 1 = 90 points; unknown 2 = 80 points; total = 170; 170 divided by 2 = 85 points for culture.) A grade of at least 70% must be achieved to pass the practical. If a student receives a grade less than 70%, he/she may retake the practical one time. If the student fails to achieve a 70% on a second practical, the student must repeat the microbiology rotation.

ALLEGANY COLLEGE OF MARYLAND  
CUMBERLAND, MD

**Student Evaluation Report**  
**Clinical Microbiology**

The objectives assume the student has completed the organized classroom and associated laboratory experience.

Name \_\_\_\_\_ Date: From \_\_\_\_\_ to \_\_\_\_\_

Department \_\_\_\_\_

Instructor \_\_\_\_\_

Please make a qualifying statement when necessary; otherwise check appropriate number for evaluation.

- \_\_\_\_\_ 1. Unsatisfactory
- \_\_\_\_\_ 2. Needs improvement
- \_\_\_\_\_ 3. Average
- \_\_\_\_\_ 4. Above Average
- \_\_\_\_\_ 5. Excellent

Achievement in clinical practice courses is evaluated in areas:

- (VI) Technical Performance
- (VII) Professional Attitudes and
- (VIII) Technical Competencies (Skills and Knowledge) and
- (IX) Total Evaluation Grade
- (X) Total Clinic Rotation Grade

(I) **Technical Performance Evaluation**

The technical performance evaluation is to be completed by matching the student's general performance on each item with the rating that most closely describes their performance in comparison to an entry level technical employee. It is recognized that an entry level Medical Laboratory Technician might not be assigned every procedure and that proficiency and level of judgment will increase with experience.

(II) **Professional Attitude**

The ratings and comments in this section are designed to provide information and counseling to assist the student to achieve personal and professional improvements and for employment recommendations. The individual should be described without reference to others. For the purpose of calculation, a score of a 3 for any item will be equated to a 3.5 on a 5 point scale so that this equates to a 70% (average score). An average of the professional behavior evaluation will be calculated.

(III) **Technical Competencies (Skills and Knowledge)**

The clinical supervisor will evaluate each student's technical performance using the rating scale 1-5. For the purpose of calculation, a score of a 3 for any item will be equated to a 3.5 on a 5 point scale so that this equates to a 70% (average score). An average of the technical performance will be calculated.

(IV) **Total Evaluation Grade**

The Professional and Technical Performance Evaluation will be averaged together as a single evaluation score to constitute 30% of the overall clinical grade.

(V) **Total Clinic Grade**

The evaluation total will be averaged with a percent on written examinations (30% of clinical grade), practicals (20% of clinical grade), and quizzes (20% of clinical grade) for each clinical area and a combined percentage of 70% is needed to receive a passing grade (P) in each clinical rotation area. In addition, the student must achieve a 70% on the final chemistry practical.

## I. TECHNICAL PERFORMANCE EVALUATION

	1	2	3	4	5
<p><b>MLT GOAL #1:</b>  <b>Students will competently perform routine clinical laboratory tests.</b></p> <p><i>(Does the student possess the attributes associated with this MLT goal? Please evaluate the student performance related to the main goal and each of the more specific criteria attributing to the goal rating.)</i></p> <p><b>Student was able to:</b></p>					
<p><b>1. Perform the routine laboratory tests associated with the department accurately and efficiently.</b></p>					
<p>a. Demonstrate competence in performing test procedures.</p>					
Comments:					
<p>b. Consistently use good techniques when performing laboratory tests.</p>					
Comments:					
<p>c. Handle equipment appropriately with necessary precautions.</p>					
Comments:					
<p>d. Make progress in organization and speed from first to last part of the rotation.</p>					
Comments:					
<p>e. Exhibit evidence of procedural review and preparation for daily assignments.</p>					
Comments:					
<p>f. Demonstrate the ability to retain instruction on where to find materials and how to perform techniques.</p>					
Comments:					
<p>g. Accurately record results; write legible reports.</p>					
Comments:					

h. Express an understanding of testing principles.					
Comments:					
i. Complete assignments.					
Comments:					
j. Demonstrate appropriate safety practices.					
Comments:					
k. Demonstrate entry level knowledge and understanding related to this subject area.					
Comments:					
l. Adjust to change in work flow and procedures.					
Comments:					
m. Demonstrate the ability to multitask in order to progress through daily assignments.					
Comments:					
n. Verify patient identification throughout all phases of analysis.					
Comments:					
o. Comply with all HIPAA regulations.					
Comments:					
<b>2. Analyze diverse types of information to choose an appropriate course of action in order to perform laboratory tests and solve problems accurately and efficiently.</b>					
f. Recognize discrepancies in quality of results.					
Comments:					
g. Recognize expected results/normal values for the testing methods.					
Comments:					

h. Recognize abnormal and critical values and explain the procedures for verifying and reporting these results.					
Comments:					
i. Correlate abnormal results with patient conditions.					
Comments:					
j. Identify the acceptability of patient results based on the evaluation of quality control data.					
Comments:					

## II. PROFESSIONAL ATTITUDES EVALUATION

	1	2	3	4	5
<p><b>MLT GOAL #2:</b>  <b>Students will possess the professional attitudes and behaviors critical to being a valued member of the healthcare/ workplace team.</b></p> <p><i>(In your opinion, does the student possess the attributes associated with this MLT goal? Please evaluate the student performance related to the main goal and each of the more specific behaviors attributing to the goal rating.)</i></p>					
<p><b>RELATIONSHIPS/COMMUNICATION</b>  <b>Student was able to:</b></p>					
<p><b>1. Communicate effectively using professional interpersonal skills resulting in successful interactions with colleagues and patients.</b></p>					
Comments:					
<p>a. Work well and communicate appropriately with co-workers.</p>					
Comments:					
<p>b. Work well and communicate appropriately with supervisors.</p>					
Comments:					
<p>c. Respects the knowledge of the trainers.</p>					
Comments:					
<p>d. Student exhibits acceptable customer service skills.</p>					
Comments:					
<p><b>2. MLT students will behave in a manner consistent with standards of the laboratory profession.</b>  <b>Student was able to:</b></p>					
<p>a. Dress appropriately for the clinical laboratory and adhere to laboratory protocol for the use of PPE.</p>					

Comments:					
b. Follow established policies and procedures.					
Comments:					
c. Is punctual and at work station when required or directed to be there.					
Comments:					
d. Complete all required rotation days.					
Comments:					
e. Demonstrate ethical behavior.					
Comments:					
f. Demonstrate accountability (acknowledges mistakes and corrects when possible) and responsibility (completion of assigned tasks, no need of reminders).					
Comments:					
g. Show initiative to improve technical skills and exhibits interest in assigned tasks.					
Comments:					
h. Evaluate own actions critically.					
Comments:					
i. Ask advice of technologists and supervisors when needed.					
Comments:					
j. Demonstrate confidence of MLT knowledge and skills.					
Comments:					
k. When work is completed asks supervisor for something to do.					
Comments:					
l. Maintain clean work benches.					

Comments:					
m. Volunteer to help in lab if workload permits (i.e. answer phones)					
Comments:					

### III. COMPETENCIES (SKILLS AND KNOWLEDGE)

	Score	% of Final Grade
1. Evaluation (Technical and Professional Performance Evaluation)	_____	<u>30%</u>
2. Examinations, quizzes, and practicals derived in the following manner:	_____	<u>70%</u>
20% - Quiz Average		_____
20% - Final Practical (student must make a 70% on practical)		_____
30% - Final Written Examination A student must make a 65% on the written comprehensive final. If a 65% is not achieved, the student may be allowed to take an alternate examination. If the student fails to make a 65% on the retake examination, the student will be required to do remediation, or repeat the clinical rotation.		_____
		_____
		<u>          </u> (Total Score)

**OPEN RESPONSE**

1. Brief Evaluation - Give main strengths, weaknesses or problems encountered during clinical experience.
  
  
  
  
  
  
  
  
  
  
2. Suggestions for improving individual's performance.

**Summary**

The student must achieve a minimum of 70% on the criteria for section 1 and 2 under competencies. A student who fails to achieve a 70% overall in any clinical rotation area must reapply to retake the specific clinical area in which the unsatisfactory grade has been obtained (refer to Medical Laboratory Technology readmission policy). The student may proceed with their assigned clinical rotation schedules and need only reapply to repeat the deficient area.

Evaluated by \_\_\_\_\_ DATE \_\_\_\_\_  
Supervisor/Evaluator Signature

Students comments regarding appraisal and counseling activity.

Reviewed with student by \_\_\_\_\_ DATE \_\_\_\_\_  
Signature

\_\_\_\_\_  
Student Signature DATE \_\_\_\_\_

# **HEMATOLOGY CLINICAL PRACTICE OVERVIEW**

## **HEMATOLOGY CLINICAL PRACTICE OVERVIEW**

The Hematology rotation is 14 days. During that time, two days are used for all day Phlebotomy training in outpatient and inpatient situations.

Days 1, 2, and 3 or 3, 4 and 5 are the pre-clinic days scheduled at Allegany College of Maryland Campus laboratory. These days are used to review and perform manual procedures not commonly encountered in the clinical laboratory. In addition, automated counting techniques are discussed, differentials are performed, and RBC and WBC morphology review is conducted.

Days 1 and 2 or days 4 and 5 are designated as phlebotomy rotation days.

Days 6-13 are spent in the Hematology/Coagulation section of the Clinical Affiliate. On day 13, the clinical practical should be completed at the clinical site. Day 14 is scheduled on the Allegany College of Maryland Campus. On day 14, the student completes the final written examination as well as the CD-ROM Morphology practical.

The student's pass/fail grade is calculated based on the following:

1. Evaluation  
(Technical and Professional Performance) 30%
  
2. Examinations, quizzes, and  
practicals derived in the  
following manner: 70%
  - 20% - Clinical Quiz Average and Successful Completion  
of the Assigned Hematology CAI
  - 20% - Final Practical
  - 30% - Final Written Examination given  
by Medical Laboratory Technology Department

### **CLINICAL SITE RESPONSIBILITIES**

#### **Student Workload**

The Hematology students in existing clinical sites work alongside a tech assigned to the department for the day. The student performs tasks on patients with the supervision of the tech working with the student that day.

Often, the student performs differentials on slides that have been verified. This allows the student to compare their report to that of a tech. This is critical with abnormal differentials.

The pre-clinic days prepare the student for the hands-on experiences they encounter. The quizzes and computer tutorials assist the student in reviewing the theoretical knowledge and morphology competency. The goal of the days which are spent in the clinical hematology lab is to gain competency in performing manual and automated procedures.

Procedures routinely included in student workload:

1. Automated CBC

Student should be able to make decisions such as:

- Does the sample need repeated?
- Does the sample meet criteria for critical values and if so, how should those values be handled?
- Does the hemoglobin and hematocrit match?
- Are there any instrument or definitive flags?
- Can the automated CBC differential be verified?
- Will the CBC require a scan or a manual differential?

2. Manual Differential

3. Fluid Cell Counts (As available depending on workload)

4. Manual Reticulocyte Count

5. Automated Reticulocyte Count (Where available)

6. Erythrocyte Sedimentation Rate

7. PT and APTT

8. Fibrinogen levels

9. FDPs and/or D-Dimer

10. Special Tests as available (Tests such as osmotic fragility, sickle cell, etc.)

**Practical Examination**

**Part I**

The automation practical examination format (to follow) explains the procedures by which student competency is assessed. This part of the practical is completed at the clinical site on Day 13. A grade is given on this part. The clinical competency part of the practical examination consists of running 10 patient CBC specimens with differentials as appropriate being performed accordingly, and also 5 PT specimens, and coagulation controls run appropriately.

## **Part II**

The morphology practical is performed on a CD-ROM at the College campus on Day 14. During the CD-ROM practical, the student completes 20 morphology identifications and 10 case studies. The two sections are averaged to make up this morphology practical grade.

## **Part III**

The student will complete the 12 Advanced WBC Differential Simulation cases and 25 RBC Morphology Simulation cases on Medialabinc.net. The 37 case scores will be averaged together to comprise the simulation score.

The automation competency grade, the morphology portion and the simulation score are then averaged together to be the practical grade percentage. This grade makes up 20% of the final rotation grade. The student must achieve a 70% on the combined Hematology/Coagulation automation practical and the morphology practical, and the simulation practical.

## **Evaluation Reports**

An evaluation of the student is to be filled out at the middle and end of the rotation. The interim evaluation report is simplified to give the student a report on progress, to identify areas of difficulty, and ways to address those difficulties.

The final evaluation report includes the technical and professional components. The final evaluation report is used to compute 30% of the student's rotation grade. The report should be completed by the person in charge, although input may be sought from those having direct contact with the student.

## **Quizzes and Exercises**

The program uses take home quizzes and CAI exercises to ensure the student adequately reviews the didactic material relevant to the rotation. These quizzes constitute 20% of their Hematology final rotation grade. The quizzes are given by the department or the clinical supervisor. The student uses texts, notes, procedures, etc. as resources for the quizzes.

## **Written Examination**

A final written, comprehensive examination is given by the department on the last day of the rotation. The test is taken at the Allegany College of Maryland campus. It counts as 30% of the final grade. A student must make at least 65% on the written comprehensive final. If a student fails to achieve a 65%, the student will be allowed to take an alternate examination. If a 65% is not achieved on the retake examination, MLT faculty will meet to decide if the student must repeat the rotation or do remediation and retake an alternate examination.

**MEDICAL LABORATORY TECHNOLOGY 207/208/210**  
**OBJECTIVES – HEMATOLOGY**

**Pre-Clinical Review Objectives**

1. Review clinical procedures – ACM campus laboratory session I.

Upon completion of this review session the student is expected to be able to:

- a. Perform manual cell counts on whole blood for WBC, RBC, and Platelets
- b. Perform a reticulocyte count
- c. Perform an erythrocyte sedimentation rate
- d. Review RBC morphology (CAI)
- e. Evaluate an abnormal blood smear for RBC morphology from an anemic patient
- f. Correlate RBC morphology with specific anemias.

2. Review clinical procedures - ACM campus laboratory session II.

Upon completion of this review session the student is expected to be able to:

- a. Describe the theory and application of automated cell counters
- b. Describe histograms and scatterplots.
- c. Understand the decisions made on an automated blood count result to include:
  - Critical values
  - Confirmation values
  - Instrument flags and definitive flags
  - Ordering a scan of the blood film or ordering a full manual differential.
  - Other decisions such as clumped platelets, cold agglutinis, lipemia, etc.
- d. Perform a differential count from abnormal patient using Hematography II Program.
- e. Review abnormal WBC morphology (CAI)

3. Review WBC differentials—ACM campus laboratory session III.

Upon completion of this review session the student is expected to be able to:

- a. Perform at least 10 WBC differentials to include abnormal WBC, RBC and platelet conditions.
- b. Report and quantitate abnormal morphology in the correct format using standardization criteria provided.

**General Hematology Clinical Rotation Objectives**

Upon completion of the clinical training time, the student is expected to be able to:

1. Describe automated cell counter operation, maintenance and quality control.
2. Perform automated cell counts using the appropriate cell counting instrumentation.
3. Make decisions on automated CBC results and take appropriate follow-up steps when necessary
4. Perform proper quality control and adhere to quality assurance policies.

5. Perform differentials on appropriate specimens evaluating leukocytes and RBC morphology.
6. Perform several abnormal differentials on leukemia and anemia blood smears evaluating leukocytes and RBC morphology.
7. Organize and perform a supervised, typical hematology workload on patient samples from the daily workload.
8. Perform automated coagulation testing and instrument maintenance. (Performance of several normal and abnormal PT and APTT samples from the daily workload and quality control.)
9. Perform or observe, as available, osmotic fragility, Sickle cell testing, stain preparations bone marrow studies, and special coagulation procedures.
10. Demonstrate dependability and initiative during the rotation by being punctual, eager to learn, or help others when assistance is necessary.
11. Cooperate with fellow laboratory workers.
12. Show concern for patients and adhere to practices which reflect a concern for quality patient results.
13. Comply with safety standards established by the laboratory department.

## HEMATOLOGY ROTATION OBJECTIVES

### *Clinical Performance Objectives in Hematology*

Upon completion of the Hematology clinical rotation, the MLT student will be able to:

#### **I. Safety**

1. Use appropriate personal protective equipment at all times when working with patient samples.
2. Locate all fire extinguishers, eye wash stations and safety showers.
3. Locate Material Safety Data Sheets, chemicals carcinogens list, and hazardous chemicals list.
4. Handle and dispose of contaminated materials according to standard precautions.

#### **II. Specimen Preparation**

1. Comply with the standard operating procedure for specimen handling and distribution.
2. Accept only specimens that meet standard laboratory protocol.
3. Describe corrective measures for samples that are lipemic, icteric or contain paraproteins.
4. Describe corrective measures for samples that are rejected due to quantity not sufficient, wrong anticoagulant, cold agglutinin, clotted, hemolyzed, improper patient identification, improper tube collected, or a sample with a value over the linearity.

#### **III. Quality Control, Quality Assurance, Regulatory Issues**

1. Evaluate quality control results according to criteria established for each test.
2. Describe the various periodic (daily, weekly) maintenance routines for each piece of equipment used during clinical rotations.
3. Observe basic computer applications where relevant.
4. Document instrument maintenance and quality control.
5. Organize patient workload and manage time to complete task assignments in specific time allowed.
6. Report critical and discrepant results to clinical instructor/supervisor.
7. Follow the confidentiality policy of the facility during testing procedures and reporting according to HIPAA guidelines.
8. Describe the process used to implement a new lot number of control material.
9. Accurately and legibly log in and maintain required records at all times.
10. Pipette accurately at all times.
11. Reconstitute control sera and standards with accuracy and reliability without direct supervision.
12. Perform quality assurance procedures for each test analysis and consistently maintain required documentation.
13. Evaluate quality control data, recognize out-of-control data and perform troubleshooting measures according to laboratory policies for all laboratory procedures.

14. Apply Westgard rules to quality control decisions, recognize out-of-control situations, and perform actions outlined in the SOP when these situations occur.
15. Determine and implement the course of action to be taken when delta checks are not correlated.
16. Recognize test results that need to be checked by repeat testing and those that are beyond the limits of linearity and perform procedures as defined by SOP when these occur.

#### **IV. Technical Procedure Objectives for Hematology**

1. State the principle operation for each of the following determinations for the instrument utilized in the laboratory in which the student rotates.
  - Cell counts (white cell, red cell, platelets, and reticulocytes [where appropriate])
  - Cell identification
  - Hemoglobin
  - Hematocrit
  - Red cell indices
  - RDW
2. Operate automated hematology instrumentation with minimal supervision and within acceptable ranges.
3. Perform non-automated hematology testing with minimal supervision and within acceptable ranges.
4. Using the automated hematology analyzer, perform a minimum of 40 CBC's and differentials.
5. Recognize abnormal flags on automated instrumentation.
6. Recognize all critical values and/or discrepant results on CBC and differentials.
7. Report all critical values and/or discrepant results on CBC and differentials to the clinical instructor.
8. Identify the corrective actions necessary for abnormal automated results.
9. Differentiate between normal and abnormal scattergram (plot) patterns.
10. Identify normal (reference) values for the following routine assays:
  - WBC count and WBC subpopulations
  - RBC indices
  - RBC count
  - Platelet count
  - Hemoglobin
  - Sedimentation rate
  - Hematocrit
  - Reticulocyte count
11. Demonstrate proper technique in preparing peripheral smears for microscopic examination to the satisfaction of the clinical instructor.
12. Evaluate a minimum of 25 peripheral blood smears for acceptable cellular distribution and staining to the satisfaction of the clinical instructor.
13. Perform a minimum of 25 peripheral smears with a combination of normal and abnormal results with 95% proficiency.
14. Perform a manual WBC count using the hemacytometer method and with

- 95% accuracy.
15. Identify abnormal red cell morphologies to include: microcytes, macrocytes, ovalocytes, spherocytes, target cells, sickle cells, schistocytes, burr cells, teardrops, acanthocytes, and rouleaux.
  16. Grade abnormal red cell morphologies according to laboratory guidelines.
  17. Identify qualitative white cell inclusions to include: toxic granulation, toxic vacuolization, Döhle bodies, Auer rods.
  18. Identify red cell inclusions to include: Howell Jolly bodies, Pappenheimer bodies, basophilic stippling, siderotic granules, Heinz bodies.
  19. Grade hypochromia and polychromasia according to laboratory guidelines.
  20. Given a peripheral smear or digital image, identify the stages of immature white cells.
  21. Given a peripheral smear or digital image, identify the stages of immature red blood cells.
  22. Correct the WBC count for nucleated red blood cells according to laboratory guidelines.
  23. Given a peripheral smear or digital image, recognize, but not speciate, malarial forms.
  24. Recognize abnormal platelet morphology.
  25. Perform or describe manual reticulocyte counts. If performed, the results should be within 20% of technologist-recorded result.
  26. Perform platelet estimate to correlate the slide and automate platelet counts.
  27. Explain the principle of the ESR and factors which might interfere with accurate results.
  28. Perform the ESR with minimum supervision and within acceptable ranges.
  29. Describe or perform a sickle cell screen (solubility test).
  30. Interpret a sickle screen according to laboratory guidelines.
  31. Differentiate normal from abnormal hematology results.
  32. Correlate abnormal hematology values with abnormal disease states.
  33. Describe the role of the MCV and RDW in the classification of Anemia.
  34. Differentiate the types of microcytic, macrocytic and normocytic anemias as to morphology, physiology and diagnostic tests.
  35. Describe the use of cytochemistry for classification of acute leukemias.
  36. Describe the use of flow cytometry in the classification of acute leukemias.
  37. Compare and contrast the chronic and acute leukemias in terms of onset and major cell type.
  38. Describe the myeloproliferative and myelodysplastic disorders with reference to FAB and WHO classification, and hematologic lab findings.

#### **V. Technical Procedures for Body Fluids**

1. Discuss the technique for preparation of body fluids for performance of cell counts and differentials
2. Perform/observe preparation of body fluids for performance of cell counts and differentials [where appropriate].
3. Recognize cells specific to each body fluid type to include:
  - Histiocytes
  - Mesothelial cells
  - Malignant cells
  - Macrophages with inclusions

- Crystals
  - Bacteria
  - Yeast
4. Describe special stains that may be performed on body fluids to detect cells and inclusions that are indicative of certain disease states.
  5. Perform cell counts with 95% accuracy and differentials within 20% of the predetermined values on body fluids [where appropriate].

## **VI. Technical Procedures for Coagulation**

1. Perform a minimum of 10 Prothrombin times and Partial thromboplastin times.
2. Explain the principles of the following procedures and the reagents used:
  - PT
  - PTT
  - Thrombin time
  - Quantitative fibrinogen
  - FDP
  - D-dimer
3. Describe or perform:
  - quantitative fibrinogen
  - thrombin time
  - FDP
  - D-dimer matching technologist results
  - describe the laboratory testing used to monitor anticoagulant therapy
4. Describe possible pathologic complications of anticoagulant therapy.
5. Describe the intrinsic and extrinsic coagulation pathways.
6. Relate appropriate laboratory test results with specific factor deficiencies.
7. Perform minor troubleshooting procedures of available coagulation reagent.
8. Correlate common coagulation and platelet disorders with available patient history, information and coagulation test results.
9. Describe the procedure or perform platelet function testing on a PFA-100 analyzer.
10. Identify common pre-analytic variables that may adversely impact patient results, including:
  - storage
  - type of anticoagulant
  - short draw
  - clotted sample
  - hematocrit >55
  - lipemia
  - hemolysis
11. When given patient history and coagulation test results, correlate thrombotic disorders with available patient history and coagulation test results.
12. In addition to the procedures listed above, describe the principle, clinical significance, and reagents used for the following coagulation tests:
  - Factor assays

- Mixing studies
  - Lupus anticoagulant (anticardiolipin assay)
  - Factor 5 Leiden
  - Protein S
  - Protein C
  - Antithrombin assay
  - Factor 10 Assay
  - PFA-100
13. State the tests used to monitor Coumadin and Heparin administration.
  14. Describe how newer anticoagulants are monitored.

**The procedures which will be performed or observed are as follows:**

1. Complete blood count
  - Primary Automated Cell Counter \_\_\_\_\_
  - Quality Control Procedures \_\_\_\_\_
2. Manual white count \_\_\_\_\_
3. Reticulocyte \_\_\_\_\_
4. Sedimentation rate \_\_\_\_\_
5. Spinal fluid cell counts \_\_\_\_\_
6. Other fluid cell counts \_\_\_\_\_
7. Screen for schistocytes \_\_\_\_\_
8. Bone marrows
  - (1) making slides \_\_\_\_\_
  - (2) staining and processing \_\_\_\_\_
9. Quality Control \_\_\_\_\_
10. Slide study of abnormal cases \_\_\_\_\_
11. Differentials - normals & abnormal \_\_\_\_\_
12. Coagulation (Automated Coagulation Analyzer)
  - (1) Prothrombin time \_\_\_\_\_
  - (2) Partial thromboplastin time \_\_\_\_\_
  - (3) Fibrinogen \_\_\_\_\_

- (4) D-Dimer Test \_\_\_\_\_
- (5) Quality Control \_\_\_\_\_

**Working Knowledge of Instruments**

The student is required to learn how to operate the equipment in the hematology laboratory.

The equipment used is as follows:

- Automated CBC Analyzer \_\_\_\_\_
- Automatic Slide Stain \_\_\_\_\_
- Automated Coagulation Analyzer \_\_\_\_\_
- PFA-100 \_\_\_\_\_

**Evaluation and Requirements for Clinical Hematology.**

- A. Achievement of the goals and objectives in Hematology will be measured by the following:
  - (1) Daily observation of the student performance by staff technologists, technicians, and supervisors for mastery of objectives. Mastery of objectives will be reflected in the final clinical evaluation.
  - (2) Practical performance - measured by daily observation of student by supervisor and satisfactory completion of a practical examination composed of doing automated CBCs, differential counts, erythrocyte morphology and platelet estimates as appropriate on patient specimens.
  - (3) Satisfactory evaluation by supervisor on Clinical Practicum report.
  - (4) Completion of Hematology Supplemental quizzes and computer aided instruction.
  - (5) A written comprehensive Clinical Hematology examination given by the Medical Laboratory Technology Department.
  - (6) Students must score a minimum average of 70% on examination, quizzes, practicals, and competencies. A student who fails to achieve a 70% overall in any clinical rotation area must reapply to retake the specific clinical area in which an unsatisfactory grade has been obtained. Refer to Medical Laboratory Technology readmission policy. The student may proceed with their assigned clinical rotation schedule and need only reapply to repeat the deficient area.

**MEDICAL LABORATORY TECHNOLOGY 207/208/210  
HEMATOLOGY REQUIRED EXERCISES**

**QUIZZES:**

- 1) Coulter Quiz - Allegany College of Maryland Faculty
- 2) Coagulation Quiz - Allegany College of Maryland Faculty
- 3) Specials Quiz - Allegany College of Maryland Faculty
- 4) Fluids Quiz - Allegany College of Maryland Faculty

**Internet Tutorials and Quizzes:**

- 1) Lab Training Library [www.medtraining.org](http://www.medtraining.org)  
University of Washington – Department of Lab Medicine

Student must complete the tutorial and the quiz on Lab training Library and the Competency Assessment with a 70% or above for the following:

- 2) Media Lab – [www.medialabinc.net](http://www.medialabinc.net)

**Multimedia Programs:**

- 1) Hematology by Anderson (Used for part of practical)
- 2) Hematology Plus by University of Minnesota
- 3) Review of RBC Morphology (CACMLE)
- 4) Atlas of Hematologic Disorders by Anderson
- 5) The Making of a Morphologist: A Visual Tour of WBCs (CACMLE)
- 6) Chronic Lymphocytic Anemia (CACMLE)
- 7) The Making of a Morphologist: A Visual Tour of RBCs (CACMLE)
- 8) HemoSurf

**Slide Study, Digital Images, and Laser Disc Images can be utilized throughout the rotation at the Allegany College of Maryland Campus.**

**MediaLab WBC Differential Simulator Competency Assessment and RBC**

**Morphology Simulation:** This is a great resource for practicing white blood cell and red blood cell identification! You will perform the 12 advanced differential cases and the 25 RBC morphology simulations and then compare cell identifications with the experts. The simulation sessions will be included as part of the Hematology Practical.

**ACM MLT Classroom Computers**

Login to network with username MEDLAB and no password.

**Allied Health Room 244**

There are three designated computers for MLT students in the computer lab. No password is required.

## Hematology Rotation

Medialabinc.net

<b>Hematology</b>	<b>Completed</b>	<b>Score %</b>
Alpha Thalassemia		
Antiplatelet and Anticoagulant Pharmacology for the Lab Professional		
Antiplatelet Medication Response Testing: Aspirin and Clopidogrel		
Authentic and Spurious Causes of Thrombocytopenia		
Beta Thalassemia		
Body Fluid Differential Tutorial		
Bone Marrow Aspiration: Normal Hematopoiesis and Basic Interpretive Procedures		
Describing a RBC Population Using RBC Indices and Red Cell Distribution Width		
Detecting and Evaluating Coagulation Inhibitors and Factor Deficiencies		
Erythrocyte Inclusions		
Fundamentals of Hemostasis		
Hemoglobinopathies: Hemoglobin S Disorders		
Hereditary Hemochromatosis		
Introduction to Flow Cytometry: Blood Cell Identification		
Myeloproliferative Neoplasms		
Normal Peripheral Blood Cells		
Red Blood Cell Morphology		
Red Cell Disorders: Peripheral Blood Clues to Nonneoplastic Conditions		
Variations in White Cell Morphology – Granulocytes		
White Cell and Platelet Disorders: Peripheral Blood Clues to Nonneoplastic Conditions		

Medtraining.org

<b>Hematology</b>	<b>Completed</b>	<b>Score %</b>
<b>Training Library</b>		
Peripheral Blood Tutor		
Coagulation Tutorial		
Body Fluids		
Amniotic Fluid		
Cerebrospinal Fluid		
Seminal Fluid		
Serous Fluid		
Synovial Fluid		
<b>Competency Assessment</b>		
Coagulation		
CSF/Serous		
Hematology		
Semen Analysis		

## INDICATORS OF ACHIEVEMENT

Student must achieve an overall 70% in the clinical rotation.

Student will be evaluated for completion of the objectives by the following system:

- 30% - Technical and Professional Performance Evaluation
  - Filled out by supervisor
  
- 20% - Quizzes and CAI Exercises
  - Series of take-home exercises and assigned CAI
  
- 30% - Written Final Examination
  - Comprehensive exam given by the ACM Medical Laboratory Technology department - A student must make at least 65% on the written comprehensive final. If a 65% is not achieved, the student will be allowed to take an alternate examination. If the student fails to make a 65% on the retake examination, the student will be required to do remediation, or repeat the clinical rotation.
  
- 20% - Practical Examination
  - 10 automated CBCs complete with decisions and differentials
  
  - 5 automated PTs, run controls, and make decisions
  
  - Morphology cell identification
    - 10 case studies
    - 20 morphology identifications
  
  - Case Simulations
    - 12 Advanced WBC differentials
    - 25 RBC morphology simulation cases
  
  - A total of 70% must be achieved on the automated, simulator and morphology parts of the Hematology practical. If a 70% is not achieved, the student will be able to repeat the part(s) of the practical one time. Failure to achieve a 70% on a second practical will result in failure of the Hematology rotation. The maximum score that can be achieved on a 2<sup>nd</sup> practical is 80%.

**MEDICAL LABORATORY TECHNOLOGY 207/208/210  
CLINICAL PRACTICE  
HEMATOLOGY  
SAMPLE ROTATION SCHEDULE**

Student:

<b>Days</b>	<b>Date</b>	<b>Topic</b>	<b>Instructor</b>
1		8:30 a.m. - Allegany College of Maryland Campus Lab 1) Manual Counts WBC, RBC, Platelets, Eosinophils 2) Manual Reticulocyte Count 3) Erythrocyte Sedimentation Rate 4) Review RBC Morphology using laser disc 5) Evaluate an abnormal blood smear for RBC Morphology 6) Anemia Review	S. Rohrbaugh
2		8:30 a.m. - Allegany College Campus Lab 1) Automated Cell Counters- principles of operation 2) Histograms and Scatterplots 3) Decisions on automated CBC Results: critical values, confirmation values, clumped platelets, etc. 4) Hematology II CD-ROM Program (abnormal Diffs) 5) WBC Morphology Review 6) Leukemia Review	S. Rohrbaugh
3		8:30 a.m.-3:30 p.m. Allegany College Campus – Differentials and CAI <b>*Manual Procedure and Differential Competency Mid-Rotation Evaluation Due</b>	<b>S. Rohrbaugh</b>
4		Phlebotomy, 7:00 a.m. Outpatient Lab	Phlebotomist assigned to area
5		Phlebotomy, 7:00 a.m. Outpatient Lab	Phlebotomist assigned to area
6		7:00 a.m.-3:00 p.m. Automated Hematology System	Tech assigned to area

7	Early Morning Phlebotomy Rounds Hematology Lab when finished Coulter Workload and Differentials	Tech assigned to area
8	7:00 a.m. – 3:00 p.m. Coulter Start-up, Workload Differentials	Tech assigned to area
9	Early Morning Phlebotomy Rounds – Report to Hematology Lab when finished Coulter Workload Special Hematology	Tech assigned to area
10	7:00-3:00 p.m. Coagulation <b>*Automation Competency Mid-Rotation Evaluation</b>	Tech assigned to area
11	7:00 a.m.-3:00 p.m. Coagulation 12:00-3:00 p.m. – CAI - AC Campus (WMMRMC)	Tech assigned to area Stacey Rohrbaugh
12	6:45 a.m. Early Morning Phlebotomy Rounds 8:00 a.m. – Hematology Lab Special Hematology/Differentials Practical Practice	Tech assigned to area
13	7:00 a.m. Automation Practical Examination	Tech assigned to area
14	8:30 a.m. Allegany College Campus 1) Written Examination 2) CD-ROM Morphology Portion of Practical	Stacey Rohrbaugh

Quizzes will be given during the rotation at the discretion of the clinical supervisor/instructor. He/she will provide dates by which work is to be completed. 10% will be removed from such work which is turned in late.

As workload and time permits, special tests will be performed and/or discussed. These tests include: Reticulocyte counts, ESR, Manual counts, Fluid counts, Bone Marrow, etc. Whenever the student has "free" time in the clinical Hematology lab, the student is expected to use the time to review abnormal slides.

## **MEDICAL LABORATORY TECHNOLOGY 207/208/210 CLINICAL HEMATOLOGY PRACTICAL**

The Hematology practical consists of hematology and coagulation automation and a hematology CD ROM practical. The CD ROM portion is taken at ACM on the day of the written examination. Both portions of the automation practical (taken at the clinical site) must be on a single rotation day.

### **PART I: AUTOMATION**

#### **CBC COMPETENCY**

The student will receive 10 EDTA blood samples, chosen at random, on which to perform automated CBC analysis. The student will be responsible for the analysis of the CBC data to include:

- 1) Does the sample need to be repeated?
- 2) Does the sample have any critical values and how are such values handled?
- 3) Do the hemoglobin & hematocrit match?
- 4) Are there any abnormal results present and what actions may be necessary? (instrument and definitive flags)
- 5) Can the automated differential be verified?
- 6) Will the CBC require a 50-cell scan or a full 100-cell differential?

The CBC data will be documented by attaching a copy of the scatterplot. All decisions and manual scans or differential results will be recorded on the scatterplot. All results requiring verification by repeating the sample analysis should be repeated and documented by attaching the second scatterplot.

The student will receive 10 points for each specimen. The results must match previous results and the differentials are to be within 95% confidence limits.

#### **COAGULATION COMPETENCY**

The student will run the normal and abnormal controls for both the PT and APTT. The student will then perform PT tests on 5 samples. The samples, printouts, or written results should be attached. The PT value and INR should be recorded. Results should be interpreted for repeat values, critical values, and appropriate decisions should be documented.

Each sample and the controls will be worth a total of 5 points. The samples should match each other within the 6% CV limit and also within previous results within 6%.

The average percent score will count as 1/3 or 33 % of the Hematology Practical.

## **PART II: SIMULATIONS: ADVANCED WBC DIFFERENTIALS and RBC MORPHOLOGY SIMULATOR**

The student will complete the 12 advanced WBC differentials and the 25 RBC Morphology simulator sessions during the Hematology rotation. The average percent score will count as 1/3 or 33 % of the Hematology Practical.

### **PART III: MORPHOLOGY:**

On day 14, the student will complete 20 morphology identifications and 10 case studies from the Hematology Atlas CD-ROM. The scores will be averaged together to make up the morphology score. The average percent score will count as 1/3 or 33 % of the Hematology Practical.

### **TOTAL SCORE**

The student must achieve a 70% on the combined Hematology/Coagulation Automation, Differential Simulations and Morphology Practical. If a 70% is not achieved, the student will be able to repeat the deficient practical component one time. Failure to achieve a 70% on the second overall practical will result in failure of the hematology rotation. The maximum score that can be achieved on the second practical is 80%.





**ALLEGANY COLLEGE OF MARYLAND  
MEDICAL LABORATORY TECHNOLOGY 207/208/210  
CLINICAL PRACTICE  
HEMATOLOGY**

**HEMATOLOGY PRACTICAL PERFORMANCE CRITERIA AND GRADING**

I. Point System

- A. Complete Blood Count = 10 CBCs will be run through the automated machine. Each fully automated CBC will be worth 5 points. Each CBC requiring a manual scan or 50 cell differentials will be worth 7 points and each CBC that requires a manual differential will be worth 10 points.

**Automated CBC Grading Rubric** – Each automated CBC is graded according to the criteria listed below.

<b>CATEGORY</b>	<b>100% of Points</b>	<b>75% of Points</b>	<b>50% of Points</b>	<b>0% of Points</b>
Proper Protective Equipment (0.5 points)	All necessary PPE is worn.	Student is missing 1 element of PPE.	Student is missing 2 elements of PPE.	No PPE is worn
Accepts only correctly identified specimens/those that meet the standard laboratory protocol. (0.5 points)	All specimens are recognized for their appropriateness.	Student does not check for clots or mix correctly.	Student does not check for a clot and specimen is not mixed correctly.	Specimen is improperly identified.
Perform the CBC according to the Established Procedure (1 point)	Student commits no mistake.	Student commits 1 mistake.	Student commits 2 mistakes.	Student commits more than 2 mistakes.
Recognize abnormal flags on automated instrument. (1 point)	Specimen flags are appropriately recognized as necessary.	Specimen flag is not recognized as necessary.	More than 1 specimen flag is not recognized as necessary.	More than 2 specimen flags are not recognized as necessary.
Recognize all critical values and/or discrepant results on CBCs. (1 point)	Discrepant results/critical results are recognized as necessary.	N/A	N/A	Discrepant results/critical results are not recognized as necessary.
Correctly recognize criteria for verifying CBC or performing a manual scan or differential (1 point)	Correctly recognize criteria for verifying CBC or performing a manual scan or differential.	N/A	N/A	Correctly recognize criteria for verifying CBC or performing a manual scan or differential.

**Manual Differential Grading Rubric – Each CBC that requires a manual diff review will be graded according to the criteria listed below.**

<b>CATEGORY</b>	<b>100% of Points</b>	<b>75% of Points</b>	<b>50% of Points</b>	<b>0% of Points</b>
Perform the WBC differential with 95% proficiency. (1 point)	Perform the WBC differential with 95% proficiency.	N/A	1 parameter is outside the 95% proficiency.	2 parameters are outside the 95% proficiency.
Identify and quantitate abnormal WBC morphology. (1 point)	Student correctly identifies and quantitates abnormal WBC morphology as appropriate.	N/A	Student correctly identifies, but does not quantitate abnormal WBC morphology as appropriate.	Student does not correctly identify or quantitate abnormal WBC morphology as appropriate.
Identify and quantitate abnormal RBC morphology (1 point)	Student correctly identifies and quantitates abnormal RBC morphology as appropriate.	N/A	Student correctly identifies, but does not quantitate abnormal RBC morphology as appropriate	Student does not correctly identify or quantitate abnormal RBC morphology as appropriate.
Platelet estimate and morphology evaluation is appropriate. (1 point)	Student correctly identifies abnormal platelet morphology as appropriate and quantitates the estimate.	N/A	Student incorrectly identifies abnormal platelet morphology or incorrectly quantitates the estimate	Student incorrectly identifies abnormal platelet morphology and incorrectly quantitates the estimate.
Accepts only properly prepared and stained slides for review. (1 point)	Accepts only properly prepared and stained slides for review.	N/A	N/A	Specimen is improperly prepared or stained and not recognized by student.

**Manual Slide Review (Scan or 50 cell Diff) – This portion is worth 2 points. One point is for using appropriate slide and the other point depends on the reason for the review.**

<b>CATEGORY</b>	<b>100% of Points</b>	<b>75% of Points</b>	<b>50% of Points</b>	<b>0% of Points</b>
Perform the WBC differential with 95% proficiency. (1 point)	Perform the WBC differential with 95% proficiency.	1 parameter is outside the 95% proficiency.	2 parameters are outside the 95% proficiency.	More than 2 parameters are outside the 95% proficiency.
Identify and quantitate abnormal WBC morphology. (1 point)	Student correctly identifies and quantitates abnormal WBC morphology as appropriate.	N/A	Student correctly identifies, but does not quantitate abnormal WBC morphology as appropriate.	Student does not correctly identify or quantitate abnormal WBC morphology as appropriate.
Identify and quantitate abnormal RBC morphology (1 point)	Student correctly identifies and quantitates abnormal RBC morphology as appropriate.	N/A	Student correctly identifies, but does not quantitate abnormal RBC morphology as appropriate.	Student does not correctly identify or quantitate abnormal RBC morphology as appropriate.
Platelet estimate and morphology evaluation is appropriate. (1 point)	Student correctly identifies abnormal platelet morphology as appropriate and quantitates the estimate	N/A	Student incorrectly identifies abnormal platelet morphology or incorrectly quantitates the estimate.	Student incorrectly identifies abnormal platelet morphology and incorrectly quantitates the estimate.
Accepts only properly prepared and stained slides for review. (1 point)	Accepts only properly prepared and stained slides for review.	N/A	N/A	Specimen is improperly prepared or stained and not recognized by student.

B. Coagulation – 5 PT (Prothrombin Times) will be run on the automated coagulation analyzer. Two levels of controls will also be run for PT/APTT Activated Partial Thrombolastin Time). Each PT will be worth 5 points and the controls will be worth 10 points. Coagulation practical is worth a total 35 points.

**Coagulation Grading Rubric**

<b>CATEGORY</b>	<b>100% of Points</b>	<b>75% of Points</b>	<b>50% of Points</b>	<b>0% of Points</b>
Proper Protective Equipment (1 point)	All necessary PPE is worn.	Student is missing 1 element of PPE.	Student is missing 2 elements of PPE.	No PPE is worn
Accepts only correctly identified specimens that meet the standard laboratory protocol. (1 point)	All specimens are recognized for their appropriateness.	N/A	N/A	Specimen is improperly identified or an inappropriate specimen is used.
Run the PT and APTT controls correctly. (10 points--1 time not each specimen)	Controls are correctly run.	N/A	Either the PT or the APTT control is incorrect.	Neither control is run correctly.
Perform the automated PT time producing accurate results. (1 point)	Student obtains accurate results within acceptable % CV limits.	N/A	N/A	Student does not obtain accurate results within acceptable % CV limits.
Recognize all critical values and discrepant results. (1 point)	Recognize all critical values and discrepant results as appropriate.	N/A	N/A	Student fails to recognize critical values or a discrepant result.
Correctly report out the PT result. (1 point)	Correctly report out the PT result.	N/A	The INR is not reported correctly.	The PT and INR are not reported correctly.

## **Calculation of the Practical Grade**

### CBC/Coag

The total points obtained by the student will be divided by the total possible points. This will constitute the automated practical portion and each section will be averaged together.

The average percent score will count as 1/3 or 33 % of the Hematology Practical.

### Morphology

To calculate together the CD Rom practical grade, the morphology grade (20 morphology IDs) and case studies (10 case studies) area is averaged together to be the student's morphology practical performance grade.

The average percent score will count as 1/3 or 33 % of the Hematology Practical.

### Case Simulations

The cases will be averaged together (25 RBC, 12 Advanced WBC). This will constitute the case simulation practical portion.

The average percent score will count as 1/3 or 33 % of the Hematology Practical.

### Total Practical Grade

The Automated Practical, Morphology Practical, and Case Simulations grades are averaged to calculate the Hematology Practical grade.

In order to successfully complete the Hematology rotation, the student must obtain an overall grade of 70% on the practical and an overall 70% for the total rotational grade. The total grade will include the written examination (30%), quizzes (20%), practical (20%) and technical and professional performance evaluation (30%).

ALLEGANY COLLEGE OF MARYLAND  
CUMBERLAND, MD

**Student Evaluation Report**  
**Clinical Hematology/Coagulation**

The objectives assume the student has completed the organized classroom and associated laboratory experience.

Name \_\_\_\_\_ Date: From \_\_\_\_\_ to \_\_\_\_\_

Department \_\_\_\_\_

Instructor \_\_\_\_\_

Please make a qualifying statement when necessary; otherwise check appropriate number for evaluation.

- \_\_\_\_\_ 1. Unsatisfactory
- \_\_\_\_\_ 2. Needs improvement
- \_\_\_\_\_ 3. Average
- \_\_\_\_\_ 4. Above Average
- \_\_\_\_\_ 5. Excellent

Achievement in clinical practice courses is evaluated in areas:

- (I) Technical Performance
- (II) Professional Attitudes and
- (III) Technical Competencies (Skills and Knowledge) and
- (IV) Total Evaluation Grade
- (V) Total Clinic Rotation Grade

(I) **Technical Performance Evaluation**

The technical performance evaluation is to be completed by matching the student's general performance on each item with the rating that most closely describes their performance in comparison to an entry level technical employee. It is recognized that an entry level Medical Laboratory Technician might not be assigned every procedure and that proficiency and level of judgment will increase with experience.

(II) **Professional Attitude**

The ratings and comments in this section are designed to provide information and counseling to assist the student to achieve personal and professional improvements and for employment recommendations. The individual should be described without reference to others. For the purpose of calculation, a score of a 3 for any item will be equated to a 3.5 on a 5 point scale so that this equates to a 70% (average score). An average of the professional behavior evaluation will be calculated.

(III) **Technical Competencies (Skills and Knowledge)**

The clinical supervisor will evaluate each student's technical performance using the rating scale 1-5. For the purpose of calculation, a score of a 3 for any item will be equated to a 3.5 on a 5 point scale so that this equates to a 70% (average score). An average of the technical performance will be calculated.

(IV) **Total Evaluation Grade**

The Professional and Technical Performance Evaluation will be averaged together as a single evaluation score to constitute 30% of the overall clinical grade.

(V) **Total Clinic Grade**

The evaluation total will be averaged with a percent on written examinations (30% of clinical grade), practicals (20% of clinical grade), and quizzes (20% of clinical grade) for each clinical area and a combined percentage of 70% is needed to receive a passing grade (P) in each clinical rotation area. In addition, the student must achieve a 70% on the final chemistry practical.

## I. TECHNICAL PERFORMANCE EVALUATION

	1	2	3	4	5
<p><b>MLT GOAL #1:</b>  <b>Students will competently perform routine clinical laboratory tests.</b></p> <p><i>(Does the student possess the attributes associated with this MLT goal? Please evaluate the student performance related to the main goal and each of the more specific criteria attributing to the goal rating.)</i></p> <p><b>Student was able to:</b></p>					
<p><b>1. Perform the routine laboratory tests associated with the department accurately and efficiently.</b></p>					
<p>a. Demonstrate competence in performing test procedures.</p>					
Comments:					
<p>b. Consistently use good techniques when performing laboratory tests.</p>					
Comments:					
<p>c. Handle equipment appropriately with necessary precautions.</p>					
Comments:					
<p>d. Make progress in organization and speed from first to last part of the rotation.</p>					
Comments:					
<p>e. Exhibit evidence of procedural review and preparation for daily assignments.</p>					
Comments:					
<p>f. Demonstrate the ability to retain instruction on where to find materials and how to perform techniques.</p>					
Comments:					
<p>g. Accurately record results; write legible reports.</p>					
Comments:					

h. Express an understanding of testing principles.					
Comments:					
i. Complete assignments.					
Comments:					
j. Demonstrate appropriate safety practices.					
Comments:					
k. Demonstrate entry level knowledge and understanding related to this subject area.					
Comments:					
l. Adjust to change in work flow and procedures.					
Comments:					
m. Demonstrate the ability to multitask in order to progress through daily assignments.					
Comments:					
n. Verify patient identification throughout all phases of analysis.					
Comments:					
o. Comply with all HIPAA regulations.					
Comments:					
<b>2. Analyze diverse types of information to choose an appropriate course of action in order to perform laboratory tests and solve problems accurately and efficiently.</b>					
a. Recognize discrepancies in quality of results.					
Comments:					
b. Recognize expected results/normal values for the testing methods.					
Comments:					
c. Recognize abnormal and critical values and explain the procedures for verifying and reporting					

these results.					
Comments:					
d. Correlate abnormal results with patient conditions.					
Comments:					
e. Identify the acceptability of patient results based on the evaluation of quality control data.					
Comments:					

## II. PROFESSIONAL ATTITUDES EVALUATION

	1	2	3	4	5
<p><b>MLT GOAL #2:</b>  <b>Students will possess the professional attitudes and behaviors critical to being a valued member of the healthcare/ workplace team.</b></p> <p><i>(In your opinion, does the student possess the attributes associated with this MLT goal? Please evaluate the student performance related to the main goal and each of the more specific behaviors attributing to the goal rating.)</i></p>					
<p><b>RELATIONSHIPS/COMMUNICATION</b>  <b>Student was able to:</b></p>					
<p><b>1. Communicate effectively using professional interpersonal skills resulting in successful interactions with colleagues and patients.</b></p>					
Comments:					
<p>a. Work well and communicate appropriately with co-workers.</p>					
Comments:					
<p>b. Work well and communicate appropriately with supervisors.</p>					
Comments:					
<p>c. Respects the knowledge of the trainers.</p>					
Comments:					
<p>d. Student exhibits acceptable customer service skills.</p>					
Comments:					
<p><b>2. MLT students will behave in a manner consistent with standards of the laboratory profession.</b>  <b>Student was able to:</b></p>					
<p>a. Dress appropriately for the clinical laboratory and adhere to laboratory protocol for the use of PPE.</p>					

Comments:					
b. Follow established policies and procedures.					
Comments:					
c. Is punctual and at work station when required or directed to be there.					
Comments:					
d. Complete all required rotation days.					
Comments:					
e. Demonstrate ethical behavior.					
Comments:					
f. Demonstrate accountability (acknowledges mistakes and corrects when possible) and responsibility (completion of assigned tasks, no need of reminders).					
Comments:					
g. Show initiative to improve technical skills and exhibits interest in assigned tasks.					
Comments:					
h. Evaluate own actions critically.					
Comments:					
i. Ask advice of technologists and supervisors when needed.					
Comments:					
j. Demonstrate confidence of MLT knowledge and skills.					
Comments:					
k. When work is completed asks supervisor for something to do.					
Comments:					
l. Maintain clean work benches.					

Comments:					
m.	Volunteer to help in lab if workload permits (i.e. answer phones)				
Comments:					

### III. COMPETENCIES (SKILLS AND KNOWLEDGE)

	Score	% of Final Grade
1. Evaluation (Technical and Professional Performance Evaluation)	_____	<u>30%</u>
2. Examinations, quizzes, and practicals derived in the following manner:	_____	<u>70%</u>
20% - Quiz Average		_____
20% - Final Practical (student must make a 70% on practical)		_____
30% - Final Written Examination A student must make a 65% on the written comprehensive final. If a 65% is not achieved, the student may be allowed to take an alternate examination. If the student fails to make a 65% on the retake examination, the student will be required to do remediation, or repeat the clinical rotation.		_____
		_____
		<u>          </u> (Total Score)

**OPEN RESPONSE**

1. Brief Evaluation - Give main strengths, weaknesses or problems encountered during clinical experience.
  
  
  
  
  
  
  
  
  
  
2. Suggestions for improving individual's performance.

**Summary**

The student must achieve a minimum of 70% on the criteria for section 1 and 2 under competencies. A student who fails to achieve a 70% overall in any clinical rotation area must reapply to retake the specific clinical area in which the unsatisfactory grade has been obtained (refer to Medical Laboratory Technology readmission policy). The student may proceed with their assigned clinical rotation schedules and need only reapply to repeat the deficient area.

Evaluated by \_\_\_\_\_ DATE \_\_\_\_\_  
Supervisor/Evaluator Signature

Students comments regarding appraisal and counseling activity.

Reviewed with student by \_\_\_\_\_ DATE \_\_\_\_\_  
Signature

\_\_\_\_\_  
Student Signature DATE \_\_\_\_\_

\*\*

**IMMUNOHEMATOLOGY  
CLINICAL  
PRACTICE OVERVIEW**

## **BLOOD BANKING CLINICAL PRACTICE OVERVIEW**

The actual amount of time spent at the clinical training site is seven days.

The Blood Banking rotation is 14 days. The first three days of the rotation are preclinical days spent at the college. Days 4-6 are spent at the clinical site. Day 7 is spent back at the college reviewing computer-assisted instruction. Days 8-12 are spent at the clinical site. Day 13 is a review day at the college in which problem areas are addressed and special procedures performed. Day 14 is the final written examination which is taken at the college.

The student's Pass/Fail grade is calculated based on the following:

Competencies (Skills and Knowledge)

- |  |     |
|--|-----|
| 1. Evaluation<br>(Technical and Professional Performance)  | 30% |
| 2. Examinations, quizzes, and<br>practicals derived in the following<br>manner:  | 70% |
| 20% - Clinical Quiz Average  |     |
| 20% - Final Practical<br>(must make a minimum of 70% on the practical)   |     |
| 30% - Final Written Examination given by Medical Laboratory Technology<br>Department. A student must make at least 65% on the written<br>comprehensive final. If a 65% is not achieved, the student may be allowed<br>to take an alternate examination. If the student fails to make a 65% on the<br>retake examination, the student will be required to do remediation, or repeat<br>the clinical rotation. |     |

\*Note: Students must score a minimum of 70% on a practical examination in order to successfully complete the blood bank rotation. See the enclosed format.

### **Clinical Site Responsibilities**

#### **Student Workload**

The Blood Bank students in existing clinical sites mostly perform tests on patients that have been completed and verified. Currently, the supervisor or students for the day selects the samples and directs student learning as questions or problems arise.

The students have the expectation that they are going to be given samples and perform the testing while working mostly independently. The supervising tech should be available if help is needed as well as to check the student results for accuracy. The student should not

expect direct supervision at all times and the preclinical days prepare the student to adapt blood bank technique specific to the institution.

In some clinical placement sites, the student is working along the staff MLT or MLS in blood bank and those techs will direct the student's daily workload.

Procedures Routinely Included in Student Workload:

- 1) Perform ABO Forward and Reverse Typing
- 2) Perform Rh typing through Du if necessary
- 3) Perform Direct Antiglobulin Test
  - polyspecific /monospecific
- 4) Perform Cord Blood Work-up
- 5) Perform Antibody Screens
- 6) Perform Antibody Identification
- 7) Perform Quality Control and Daily Maintenance
- 8) Perform Crossmatch
- 9) Perform Rh Immune Globulin Candidacy
- 10) Perform Detection of Fetomaternal Hemorrhage by the Rosette Test (Fetal Screen)
- 11) Observe the Release of Components from the Laboratory
- 12) Observe the Rotation of Blood Bank Component Inventory
- 13) Observe the Electronic Crossmatch

The number of rotation days have been reduced to a minimum, but this requires efficiency of the days spent at the clinical site.

### **Supervising Tech**

Daily Workload

The supervising tech for the day can be a Medical Laboratory Scientist or Medical Laboratory Technician. The student is responsible for being prepared and motivated for the day's activities. The supervising tech should direct the learning. The supervising tech should have input into the student evaluation.

### **Clinical Supervisor**

In each of our clinical affiliates, the laboratory section supervisor or manager is the contact person for the college. This person is responsible for assuring the mid-term and final evaluations are completed and forwarded to the department. Any tech can assume this responsibility, and it is this person supervising the student rotation in that section that is appointed as clinical faculty.

### **Practical Examination**

The enclosed practical examination format explains the types of procedures given to students and how the practical is graded. Another practical examination format is enclosed

and illustrates the types of specimens given to try to “standardize” the practical. The practical must be successfully completed to pass the rotation. The practical is taken on Day 12 of the rotation. The practical constitutes 20% of the final clinical average. The student must pass the blood bank practical to pass the rotation.

### **Evaluation Reports**

An evaluation of the student is to be filled out at the middle and end of the rotation. The interim evaluation report is simplified to give the student a report on progress and to identify areas of difficulty. The final evaluation report includes the technical and professional components. The technical and professional component of the final evaluation is used to compute 30% of the student rotation grade. The report should be completed by the person in charge, although, input may be sought by those having direct contact with the student.

### **Quizzes and Exercises**

The program uses take home quizzes/exercises and computer tutorials/quizzes to ensure that the student adequately reviews the didactic material relevant to the rotation. The quizzes constitute 20%. The quizzes are given by the department. The student uses texts, notes, procedures, etc. as resources for the quizzes.

### **Written Examination**

A written, comprehensive examination is given by the department on the last day of the rotation. The test is taken at the Allegany College of Maryland Campus. It counts as 30% of the final grade. A student must make a 65% on the written comprehensive final. If a 65% is not obtained in the first examination, the student will complete a second examination. If a 65% is not achieved on the second examination, the student will be required to do remediation, or to repeat the entire clinical rotation as determined by the MLT Program Director in consultation with program and clinical faculty.

**CLINIC ROTATION**  
**MEDICAL LABORATORY TECHNOLOGY 207/208/210**

**OBJECTIVES – BLOOD BANK**

1. Review Clinical Procedures - Allegany College of Maryland Campus Lab Session I.

Upon completion of this review session the student is expected to be able to:

- a. Perform, document, and interpret ABO grouping procedure.
- b. Perform, document, and interpret Rh typing procedure.
- c. Perform, document, and interpret indirect antiglobulin test (D<sup>u</sup>).
- d. Describe each of the above procedures showing thorough understanding of the theory and practical applications.

2. Review Clinical Procedures - Allegany College of Maryland Campus Lab Session II.

Upon completion of this review session the student is expected to be able to:

- a. Describe the similarities and differences between the indirect and direct antiglobulin tests.
- b. Perform, document, and interpret the direct antiglobulin test.
- c. Describe the work-up of the specimen with a positive DAT.
- d. Perform, document, and interpret the procedures done for a Cord Blood work-up.
- e. Perform, document, and interpret the antibody screen.
- f. Perform appropriate antibody identification on positive antibody screens.
- g. Describe each of the above procedures showing a thorough understanding of the theory and practical applications.

3. Review Clinical Procedures - Allegany College of Maryland Campus Lab Session III

Upon completion of this review session the student is expected to be able to:

- a. Describe antibody identification procedures, and draw conclusions on the identification of specific antibodies.
- b. Describe problems in antibody identification.
- c. Perform routine, complete, crossmatching to include donor type recheck.
- d. Perform the phenotyping procedure and discuss the applications of the test.
- e. Identify appropriate blood groups for the transfusion of packed cells and fresh frozen plasma.
- h. Describe each of the above procedures showing a thorough understanding of the theory and practical applications.

4. Clinical Setting: Upon Completion of the Clinical Training Sessions, the student is expected to be able to:

- a. **Specimen Handling and Processing**

1. Following departmental protocol, demonstrate safe work practices by:
  - Wearing personal protective equipment (PPE) as required.
  - Handling and disposing of contaminated materials according to standard precautions.
  - Handling chemicals according to safety procedures.
2. Identify the types of blood samples and collection tubes appropriate for routine testing in the blood bank.

3. Determine the acceptability of a sample for compatibility testing based on sample age, sample appearance and institutional policy.
  4. List the minimum information required for labeling samples for blood bank testing.
- b. **Quality Assurance/Quality Control and Regulatory Issues**
1. Use all blood bank equipment including centrifuges, cell washers, incubators, agglutination viewers.
  2. Perform all routine maintenance tasks on the equipment used.
  3. Perform basic trouble shooting on the equipment used.
  4. Perform daily quality control for routine testing according to the operating procedures of the laboratory with 100% accuracy.
  5. Recognize discrepant results in routine ABO, Rh and antibody screen testing with 100% accuracy.
  6. Report all discrepant results to the clinical instructor.
  7. List the quality control activities that are performed monthly, quarterly, and annually.
  8. Perform and document appropriate daily quality control procedures for all blood bank reagents.
  9. Observe, and if allowed, perform and document appropriate daily quality control checks on temperature regulated equipment.
  10. Perform or observe basic laboratory computer applications where relevant.
  11. State the patient confidentiality policy of the facility that complies with HIPPA guidelines for testing and reporting procedures.
  12. List the accrediting and inspection agencies that monitor blood banks and transfusion services.
- c. **Routine Technical Procedures – ABO/Rh, Ab Screen and DAT**
1. Using a “0 to 4+” scale, grade macroscopic and automated system agglutination reactions within  $\pm 1$  agglutination grade of the instructor.
  2. Prepare a 3-5% red cell suspension as needed for tube testing.
  3. Label test tubes for routine testing according to laboratory procedure without error.
  4. Perform ABO and Rh testing on a minimum of 25 samples with 100% accuracy.
  5. Interpret the results of ABO and Rh testing without error.
  6. Perform weak D testing on designated patient samples when available.  
(optional)\*
  7. Perform ABO confirmatory testing on a minimum of 10 donor segments with 100% accuracy.
  8. Perform antibody screening on a minimum of 20 samples to the satisfaction of the clinical instructor.
  9. Explain the next step/s to be taken to investigate a positive antibody screen.
  10. Compare and contrast direct and indirect antiglobulin testing with regard to principle, procedure and application.
  11. Identify sources of false negative and false positive error in antiglobulin testing.
  12. Perform DAT on a minimum 2 samples to the satisfaction of the clinical instructor.
- d. **Routine Technical Procedures – Crossmatching and Transfusion Management**
1. Label test tubes for routine compatibility testing according to laboratory protocol without error.

2. Perform the appropriate crossmatch procedure, immediate spin (IS) or Full (IAT), on a minimum of 10 samples when given the relevant patient information and the policy of the laboratory.
  3. Select the most appropriate donor units to crossmatch with a patient when ABO specific red cells are available and when not available.
  4. Select the most appropriate donor units when the patient presents with:
    - single alloantibody
    - multiple alloantibodies
  5. Interpret the results of crossmatching with 100% accuracy.
  6. Explain possible causes of an incompatible crossmatch.
  7. Describe the policies for emergency release and massive transfusion.
  8. Distinguish ABO and Rh-related HDN according to clinical and serologic presentation.
  9. Perform or describe the prenatal (mother) and postnatal (mother and newborn) serologic workups for managing cases of HDN.
  10. Observe or describe the procedures for RhIg administration including candidate selection, FMH screening, and dosage determination.
  11. Compare and contrast the following adverse reactions to transfusion with regard to cause, classic signs & symptoms, and serologic investigation (if applicable):
    - Immediate Hemolytic Urticarial
    - Delayed Hemolytic Anaphylactic
    - Febrile Non-hemolytic Bacterial sepsis
    - TRALI (optional) Volume Overload (optional)
  12. Describe a typical transfusion reaction work-up.
  13. Compare and contrast warm and cold reacting autoantibodies with regard to serologic presentation, related testing and transfusion approaches.
- e. **Reference Procedures**
1. Perform routine antibody identification panels on a minimum of 5 samples according to the acceptable precision of the laboratory.
  2. Interpret the results of routine and selected cell panels to determine the specificity of single and multiple antibodies (simple).
  3. Perform or describe the following reference techniques to assist in antibody identification.
    - Selected cell panel
    - Red cell (antigen) phenotyping
    - Enhancement media (PEG & LISS) and Enzyme treatment
    - Acid Elution
    - Pre-warmed technique
  4. Compare and contrast the serologic characteristics of antibodies to the following blood group systems:
    - Rh Kell
    - Kidd Duffy
    - MNSs Lewis
    - Lutheran I
    - P<sub>1</sub>

**f. Donor /Components/Product Disposition**

1. Describe the physical and medical criteria used in the selection of the following blood donors:
  - Allogeneic
  - Autologous
  - Directed
2. Describe the processing of a donor to include:
  - Donor history
  - Physical exam
  - Donor acceptability
  - Proper unit collection and handling
3. Identify the blood bank serologies and viral marker testing required on all allogeneic, autologous and directed units.
4. Explain the preparation of the following components from whole blood:
  - Packed red blood cells
  - Fresh frozen plasma
  - Random platelets
  - Cryoprecipitate
5. Identify the shelf life, storage requirements and therapeutic use of:
  - Packed red blood cells
  - Fresh frozen plasma
  - Platelets (random & single donor)
  - Cryoprecipitate
  - Frozen red blood cells
  - Leuko-reduced red blood cells
  - Irradiated red blood cells
  - Washed red blood cells
  - Factor VIII & IX concentrates
  - Rh Immune globulin
6. Explain the daily inventory review and inspection of blood products.
7. Issue or observe the issue (release) of blood products for administration

**g. Automation**

1. State the principle of measurement for the automated Blood Bank system used during clinical rotation.
2. Describe the appearance of the strengths of agglutination on the automated Blood Bank system used during clinical rotation.

**Evaluation and Requirements for Clinical Immunohematology**

Achievement of the goals and objectives in blood bank will be measured by the following:

- (1) Daily observation of student performance by staff technologists, technicians, and supervisor for mastery of objectives.
- (2) Evaluation reports. The clinical supervisors will complete a technical and professional evaluation at the end of the rotation which is based on daily student observations done by area supervisor while the student completes performance on practice specimens. The practice specimens are designed to prepare the student to complete a practical examination composed of proper patient I.D., proper blood labeling, typing, crossmatching, antibody screen, and identification of known cases.

- (3) Satisfactory performance on the clinical practical is necessary to complete the rotation. An unsatisfactory second practical attempt will result in a failure of the practical and the rotation.
- (4) Completion of Blood Bank supplementary quizzes and computer aided instruction.
- (5) A written comprehensive Clinical Immunohematology examination given by the Medical Laboratory Technology Department. A student must make a 65% on the written comprehensive final. If a 65% is not achieved, the student will be allowed to take an alternate examination. If the student fails to make a 65% on the retake examination, the student will be required to do remediation, or to repeat the clinical entire rotation as determined by the MLT Program Director in consultation with program and clinical faculty.
- (6) Students must score a **minimum average of 70% on a practical examination** in order to successfully complete the blood bank rotation. In addition, the **student must obtain an overall 70% on examinations, quizzes, practicals, and competencies**. A student who fails to achieve a 70% overall in any clinical rotation area must reapply to retake the specific clinical area in which an unsatisfactory grade has been obtained. Refer to Medical Laboratory Technology readmission policy. The student may proceed with their assigned clinical rotation schedule and need only reapply to repeat the deficient area.
- (7). Student will receive an interim evaluation at the middle of the rotation. This progress report will be completed by the clinical supervisor. Any deficiencies will be brought to the attention of AC faculty and be addressed by the student with the support of AC faculty and the clinical supervisor.

**Written Required Exercises:**

The Hospital supervisors and/or Allegany College of Maryland Medical Laboratory Faculty will give graded written quizzes. These quizzes will be open-book.

**Required Computer Tutorials/Quizzes****Computer Programs:**

- 1) Antiglobulin Tests - Medlab Blood Bank Folder
- 2) Problem Solving in Blood Bank - FA Davis (Multimedia Lab)
- 4) Autoimmune Hemolytic Anemia
- 5) Case Studies from the Transfusion Service
- 6) Hemolytic Disease of the Newborn
- 7) An Overview of Blood and Blood Components

Login to network with username MEDLAB and no password.

Immunoematology Rotation  
Medialabinc.net

<b>Immunoematology (Blood Bank)</b>	<b>Completed</b>	<b>Score %</b>
ABO Typing Discrepancies		
Adverse Effects of Fresh Frozen Plasma Transfusion: TRALI, TACO and Allergic Reactions		
Antibody Detection and Identification		
Current Good Manufacturing Practices for Transfusion Services		
Hemolytic Disease of the Fetus and Newborn		
Immune Hemolytic Anemias		
Introduction of the ABO Blood Group System		
Overview Of Major Antigens of the Rh Blood Group System		
Rh Negative Female with Anti-D at Delivery: A Case Study		
The Disappearing Antibody: A Case Study		
Transfusion Reactions		

Medtraining.org

<b>Immunoematology (Blood Bank)</b>	<b>Completed</b>	<b>Score %</b>
<b>Training Library</b>		
Introduction of Transfusion Service		
Transfusion Safety: Ordering and Administering		
Transfusion Safety: Specimen Collection		
Transfusion Safety: Testing and Issuance		
<b>Competency Assessment</b>		
Transfusion Safety: Testing and Issuance		
Transfusion Service: Basic		
Transfusion Service: Intermediate		
Transfusion Safety: Ordering and Administering		
Transfusion Safety: Specimen Collection		

## **Indicators of Achievement:**

Students must achieve an overall 70% to pass the rotation. Student must also achieve a passing grade on the practical to pass the rotation. The student will be evaluated for completion of the Performance Evaluation.

- 30% Technical and Professional Performance Evaluation
  - filled out by supervisor
- 20% Quizzes and Exercises
  - series of take home exercises/computer tutorials with quizzes
- 30% Written Final Examination
  - comprehensive
  - A student must make a 65% on the written comprehensive final. If a 65% is not achieved, the student may be allowed to take an alternate examination. If the student fails to make a 65% on the retake examination, the student will be required to do remediation, or repeat the clinical rotation.
- 20% Practical Examination
  - 6 routine specimens for crossmatch, Type/Screen, and Cord Blood. An overall grade of 70% must be obtained on the blood bank practical to pass the rotation. In addition some parameters have been identified on the format to require 100% competency to pass the practical. If a student fails to pass the practical, a second practical may be attempted with a maximum possible score of 80%. A failure to pass the second practical will result in a failure to pass the blood bank rotation.

**MEDICAL LABORATORY TECHNOLOGY 207/208/210  
CLINICAL PRACTICE  
IMMUNOHEMATOLOGY  
SAMPLE ROTATION SCHEDULE**

Student:

<b>Days</b>	<b>Date</b>	<b>Topic</b>	<b>Instructor</b>
1	8:30	Review Clinical Procedures Allegany College of Maryland Campus Lab AH251 a. Group and Rh tests b. Direct Antiglobulin Test c. Indirect Antiglobulin Test (lectures on above topics are given and students will perform tests discussed)	S. Rohrbaugh
2	8:30	Review Clinical Procedures Allegany College of Maryland Campus Lab AH251 a. Prenatal Test b. Cord Blood Test c. Crossmatch (Compatibility Test) d. Direct Antiglobulin Test e. Indirect Antiglobulin Test (lectures on above topics are given and students will perform tests discussed)	S. Rohrbaugh
3	8:30	Review Clinical Procedures a. Antibody Identification b. Crossmatch Allegany College Campus of Maryland AH251	S. Rohrbaugh
4		Orientation to Blood Bank a. Introduction to Use of Equipment (1) Centrifuge (2) Serofuge b. Quality Control Procedures (1) Temperature Monitoring and Recording (2) Cell Washer Daily Maintenance (3) Quality Assurance Blood Bank Program c. Blood Grouping, Rh, Antibody Screening	Tech assigned to area

5		Blood Grouping & Rh Antibody Screening Crossmatch	Tech assigned to area
6		Blood Grouping & Rh Antibody Screening Crossmatch	Tech assigned to area
7		Cord Blood RhoGAM Candidacy Blood Grouping & Rh Antibody Screen	Tech assigned to area
8	8:30	Allegany College Campus Lab CAI, Discussions, Quizzes	S. Rohrbaugh
9		Group, Rh, Crossmatch	Tech assigned to area
<b>Interim Evaluation Report Due</b>			
10		Group, Rh, Crossmatch Unit Processing – Verification of Typing and Labeling of JARC Donor Blood Possible Problem Crossmatch Identification of Atypical Antibodies	Tech assigned to area
11		Problem Crossmatch Antibody Identification	Tech assigned to area
12		Practical Examination MH	Tech assigned to area
13	8:30 AM	Allegany College Campus Lab Antibody Identification Blood Bank Workload Review Special Topics	S. Rohrbaugh
14	8:30 AM	Written Examination Allegany College	S. Rohrbaugh

Quizzes/Exercises will be given during the rotation at the discretion of the clinical supervisor/instructor. He/she will provide dates by which work is to be completed. 10% will be removed from such work that is turned in late.

**Medical Laboratory Technology 207/208/210**  
**Blood Bank Practical Format**

Directions:

1. Identify as completely as possible any atypical antibodies detected in any specimen.
2. Explain any incompatible crossmatch result.
3. Show all work performed.
4. Record results of work performed in the appropriate area.
5. You will have the entire day to complete the work given below. Work at your own pace. Don't be in a hurry!
6. Save all Specimens – Cell suspensions, original tubes, original segments, serum.
7. Practical must be completed in an 8 hour clinical rotation day.

SPECIMEN	TESTS TO BE PERFORMED
1. _____	Type and Screen
2. _____ Units: A. B. C.	Type and crossmatch (major) 3 units. The unit numbers are listed to the left. Investigate any incompatible results encountered.
3. _____ A. B.	Type and crossmatch (major) 2 units. The unit numbers are listed to the left. Investigate any incompatible crossmatch results encountered.
4. _____	Type and Screen
5. _____	Type and Screen
6. _____	Cord blood testing (Type and DAT)

Minimal Passing Requirements:

1. 100% identification of ABO grouping
2. 100% identification of Rh typing
3. Able to detect the presence of an atypical antibody
4. Correct crossmatch interpretation
5. Repeat work at any stage you might find a discrepancy
6. 100% PATIENT/DONOR IDENTIFICATION

Grading

5-10 points will be removed for each mistake found that is not listed in the above criteria. The student must achieve a 70% on the practical in order to pass the rotation. A failure to demonstrate any of the six requirements listed above, will result in failure status.

**CLINICAL BLOOD BANK PRACTICAL  
GRADING RUBRIC**

**PART I. 100% competency is required for the following items: Any unsatisfactory item will result in a failure of the practical and rotation.**

<b>CATEGORY</b>	<b>Satisfactory 100% Competency</b>	<b>Unsatisfactory &lt; 100% Competency</b>
Correct ABO Interpretation	Student has met the objective successfully.	Student did not meet the objective successfully.
Correct Rh Results/Interpretation	Student has met the objective successfully.	Student did not meet the objective successfully.
Correct Patient/Unit Identification	Student has met the objective successfully.	Student did not meet the objective successfully.
Correct Unit Type is Assigned	Student has met the objective successfully.	Student did not meet the objective successfully.
Correct Crossmatch Interpretation	Student has met the objective successfully.	Student did not meet the objective successfully.
Correct Antibody Screen Interpretation	Student has met the objective successfully.	Student did not meet the objective successfully.
Correct ABO Reactions	Student has met the objective successfully.	Student did not meet the objective successfully.

50 points are awarded for successful completion of Part I.

If a student fails any portion of Part I, the practical receives a failing grade. Clinical faculty will consult with Allegany College of Maryland Medical Laboratory Technology faculty to evaluate the failure as part of the student's entire body of work during the rotation.

## PART II. Grading of Other Practical Elements

CATEGORY	100% of Points	75% of Points	50% of Points	0% of Points
Written or computerized report is correctly completed. (5 points)	All technical fields are correctly filled in and date/tech initials are indicated (5 points)	All technical fields are correct, but a date, tech initials or other non-technical field is absent/incorrect (3.75 points)	All technical fields are correct, but multiple non-technical fields are absent/incorrect (2.5 points)	A technical field has been incorrectly filled in or is incomplete
Antibody Panel Reactions (10 points)	All reactions are correct (10 points)	One reaction is incorrect (7.5 points)	Two reactions are incorrect (5 points)	More than 2 reactions are incorrect
Antibody Identification/ Panel (5 points)	The antibody panel interpretation is correct (5 points)	N/A	The antibody panel reactions were correct, but the student did not properly perform the rule out/rule in procedure (2.5 points)	The antibody panel reactions were not correct, and the student did not properly perform the rule out/rule in procedure (0 points)
DAT Reactions are Correct (5 points)	The DAT procedure results are correct (5 points)	N/A	N/A	The DAT procedure results are incorrect (0 points)
DAT Interpretation is Correct (5 points)	The DAT procedure interpretation is correct (5 points)	N/A	N/A	The DAT procedure interpretation is correct
Reaction Grading (10 points)	All reactions are graded appropriately. (10 points)	One reaction is graded >2+ difference (7.5 points)	Two reactions are graded with a >2+ difference (5 points)	More than two reactions are graded with a >2+ difference
Correct procedures are followed in regards to incubation times, centrifugation times, etc. (10 points)	All procedures have been correctly performed (10 points)	N/A	One procedure was incorrectly performed (5 points)	Two or more procedures were incorrectly performed (0 points)

### Scoring:

Each part of the Blood Bank Clinical Practical will be worth 50 points. Part I of the Blood Bank Clinical Rotation Practical must be completed with 100% proficiency. The grade for the practical will be assessed using the appropriate Rubrics. An overall 70% must be achieved in order to pass the practical and the blood bank rotation.

## BLOOD BANK ROTATION PROCEDURES

### Purpose and Principles of Blood Bank Procedures.

The student should understand the purpose and principles of the procedures. A complete understanding of the theory involved is necessary so that each may be performed with complete reliability.

The procedures performed in clinical rotation by manual tube, manual gel or automated system are as follows:

#### Routine

- a. Direct Coombs (DAT) \_\_\_\_\_
  - (1) polyspecific \_\_\_\_\_
  - (2) IgG monospecific \_\_\_\_\_
- b. ABO and Rh Typing (tube method) \_\_\_\_\_
- c. Prenatal testing \_\_\_\_\_
  - (1) typing (ABO and Rh) \_\_\_\_\_
  - (2) antibody screening \_\_\_\_\_
- d. Crossmatch \_\_\_\_\_
  - (1) typing \_\_\_\_\_
  - (2) antibody screening \_\_\_\_\_
  - (3) major-immEDIATE spin \_\_\_\_\_
  - (4) major-IAT \_\_\_\_\_
- e. RhoGAM Testing \_\_\_\_\_
  - (1) typing (ABO and Rh) \_\_\_\_\_
  - (2) antibody screening \_\_\_\_\_
  - (3) Micro Du or Fetal screen \_\_\_\_\_
- f. Cord bloods \_\_\_\_\_
  - (1) direct Coombs \_\_\_\_\_
  - (2) forward ABO group & RH \_\_\_\_\_
- g. Processing Units - American Red Cross \_\_\_\_\_
- h. Dispensing blood (observation) \_\_\_\_\_
  - (1) units to Operating Room, \_\_\_\_\_  
Labor and Delivery, or Dialysis \_\_\_\_\_
  - (2) units to floor \_\_\_\_\_
  - (3) RhoGAM \_\_\_\_\_
- i. Procedures for blood returned \_\_\_\_\_  
from OR or L & D \_\_\_\_\_

Specials

- a. Panel for antibody identification
  - (1) warm panel \_\_\_\_\_
    - (a) saline phase \_\_\_\_\_
    - (b) OAES-IAT phase \_\_\_\_\_
  - (2) pre-warm screening \_\_\_\_\_
  - (3) pre-warm panel \_\_\_\_\_
  - (4) autocontrol \_\_\_\_\_
- b. Elution \_\_\_\_\_
  - (1) Rapid Acid Elution \_\_\_\_\_
- c. Phenotype \_\_\_\_\_
  - (1) Rh system \_\_\_\_\_
  - (2) Anti A<sub>1</sub> lectin \_\_\_\_\_
  - (3) Other blood group systems including \_\_\_\_\_
    - Kell system \_\_\_\_\_
    - Duffy system \_\_\_\_\_
    - Lewis system, etc. \_\_\_\_\_

Components-JARC Dispensing

- a. packed RBCs \_\_\_\_\_
- b. fresh frozen plasma SD plasma (Solvent Detergent Plasma) \_\_\_\_\_
- c. cryoprecipitate \_\_\_\_\_
- d. platelets \_\_\_\_\_

Miscellaneous Procedures

- a. releasing blood (observation) \_\_\_\_\_
- b. quality control \_\_\_\_\_
- c. transferring blood \_\_\_\_\_
- d. emergency transfusions (observation) \_\_\_\_\_
- e. previous records check \_\_\_\_\_

**Working Knowledge of Instruments**

The student is required to learn principles, operation, and trouble-shooting of the institution specific equipment in the blood bank areas.

The equipment used for manual procedures is as follows:

- Cell Washer
- Serofuge

The equipment instrumentation for the Ortho Gel Technology is specifically used at all ACM clinical affiliates.

ALLEGANY COLLEGE OF MARYLAND  
CUMBERLAND, MD

**Student Evaluation Report**  
**Clinical Immunohematology**

The objectives assume the student has completed the organized classroom and associated laboratory experience.

Name \_\_\_\_\_ Date: From \_\_\_\_\_ to \_\_\_\_\_

Department \_\_\_\_\_

Instructor \_\_\_\_\_

Please make a qualifying statement when necessary; otherwise check appropriate number for evaluation.

- \_\_\_\_\_ 1. Unsatisfactory
- \_\_\_\_\_ 2. Needs improvement
- \_\_\_\_\_ 3. Average
- \_\_\_\_\_ 4. Above Average
- \_\_\_\_\_ 5. Excellent

Achievement in clinical practice courses is evaluated in areas:

- (VI) Technical Performance
- (VII) Professional Attitudes and
- (VIII) Technical Competencies (Skills and Knowledge) and
- (IX) Total Evaluation Grade
- (X) Total Clinic Rotation Grade

(I) **Technical Performance Evaluation**

The technical performance evaluation is to be completed by matching the student's general performance on each item with the rating that most closely describes their performance in comparison to an entry level technical employee. It is recognized that an entry level Medical Laboratory Technician might not be assigned every procedure and that proficiency and level of judgment will increase with experience.

(II) **Professional Attitude**

The ratings and comments in this section are designed to provide information and counseling to assist the student to achieve personal and professional improvements and for employment recommendations. The individual should be described without reference to others. For the purpose of calculation, a score of a 3 for any item will be equated to a 3.5 on a 5 point scale so that this equates to a 70% (average score). An average of the professional behavior evaluation will be calculated.

(III) **Technical Competencies (Skills and Knowledge)**

The clinical supervisor will evaluate each student's technical performance using the rating scale 1-5. For the purpose of calculation, a score of a 3 for any item will be equated to a 3.5 on a 5 point scale so that this equates to a 70% (average score). An average of the technical performance will be calculated.

(IV) **Total Evaluation Grade**

The Professional and Technical Performance Evaluation will be averaged together as a single evaluation score to constitute 30% of the overall clinical grade.

(V) **Total Clinic Grade**

The evaluation total will be averaged with a percent on written examinations (30% of clinical grade), practicals (20% of clinical grade), and quizzes (20% of clinical grade) for each clinical area and a combined percentage of 70% is needed to receive a passing grade (P) in each clinical rotation area. In addition, the student must achieve a 70% on the final chemistry practical.

## I. TECHNICAL PERFORMANCE EVALUATION

	1	2	3	4	5
<p><b>MLT GOAL #1:</b>  <b>Students will competently perform routine clinical laboratory tests.</b></p> <p><i>(Does the student possess the attributes associated with this MLT goal? Please evaluate the student performance related to the main goal and each of the more specific criteria attributing to the goal rating.)</i></p> <p><b>Student was able to:</b></p>					
<p><b>1. Perform the routine laboratory tests associated with the department accurately and efficiently.</b></p>					
<p>a. Demonstrate competence in performing test procedures.</p>					
Comments:					
<p>b. Consistently use good techniques when performing laboratory tests.</p>					
Comments:					
<p>c. Handle equipment appropriately with necessary precautions.</p>					
Comments:					
<p>d. Make progress in organization and speed from first to last part of the rotation.</p>					
Comments:					
<p>e. Exhibit evidence of procedural review and preparation for daily assignments.</p>					
Comments:					
<p>f. Demonstrate the ability to retain instruction on where to find materials and how to perform techniques.</p>					
Comments:					
<p>g. Accurately record results; write legible reports.</p>					
Comments:					

h. Express an understanding of testing principles.					
Comments:					
i. Complete assignments.					
Comments:					
j. Demonstrate appropriate safety practices.					
Comments:					
k. Demonstrate entry level knowledge and understanding related to this subject area.					
Comments:					
l. Adjust to change in work flow and procedures.					
Comments:					
m. Demonstrate the ability to multitask in order to progress through daily assignments.					
Comments:					
n. Verify patient identification throughout all phases of analysis.					
Comments:					
o. Comply with all HIPAA regulations.					
Comments:					
<b>2. Analyze diverse types of information to choose an appropriate course of action in order to perform laboratory tests and solve problems accurately and efficiently.</b>					
a. Recognize discrepancies in quality of results.					
Comments:					
b. Recognize expected results/normal values for the testing methods.					
Comments:					
c. Recognize abnormal and critical values and explain the procedures for verifying and reporting these results.					

Comments:					
d. Correlate abnormal results with patient conditions.					
Comments:					
e. Identify the acceptability of patient results based on the evaluation of quality control data.					
Comments:					

## II. PROFESSIONAL ATTITUDES EVALUATION

	1	2	3	4	5
<p><b>MLT GOAL #2:</b>  <b>Students will possess the professional attitudes and behaviors critical to being a valued member of the healthcare/ workplace team.</b></p> <p><i>(In your opinion, does the student possess the attributes associated with this MLT goal? Please evaluate the student performance related to the main goal and each of the more specific behaviors attributing to the goal rating.)</i></p>					
<p><b>RELATIONSHIPS/COMMUNICATION</b>  <b>Student was able to:</b></p>					
<p><b>1. Communicate effectively using professional interpersonal skills resulting in successful interactions with colleagues and patients.</b></p>					
Comments:					
<p>a. Work well and communicate appropriately with co-workers.</p>					
Comments:					
<p>b. Work well and communicate appropriately with supervisors.</p>					
Comments:					
<p>c. Respects the knowledge of the trainers.</p>					
Comments:					
<p>d. Student exhibits acceptable customer service skills.</p>					
Comments:					
<p><b>2. MLT students will behave in a manner consistent with standards of the laboratory profession.</b>  <b>Student was able to:</b></p>					
<p>a. Dress appropriately for the clinical laboratory and adhere to laboratory protocol for the use of PPE.</p>					

Comments:					
b. Follow established policies and procedures.					
Comments:					
c. Is punctual and at work station when required or directed to be there.					
Comments:					
d. Complete all required rotation days.					
Comments:					
e. Demonstrate ethical behavior.					
Comments:					
f. Demonstrate accountability (acknowledges mistakes and corrects when possible) and responsibility (completion of assigned tasks, no need of reminders).					
Comments:					
g. Show initiative to improve technical skills and exhibits interest in assigned tasks.					
Comments:					
h. Evaluate own actions critically.					
Comments:					
i. Ask advice of technologists and supervisors when needed.					
Comments:					
j. Demonstrate confidence of MLT knowledge and skills.					
Comments:					
k. When work is completed asks supervisor for something to do.					
Comments:					
l. Maintain clean work benches.					

Comments:					
m. Volunteer to help in lab if workload permits (i.e. answer phones)					
Comments:					

### III. COMPETENCIES (SKILLS AND KNOWLEDGE)

	Score	% of Final Grade
1. Evaluation (Technical and Professional Performance Evaluation)	_____	<u>30%</u>
2. Examinations, quizzes, and practicals derived in the following manner:	_____	<u>70%</u>
20% - Quiz Average		_____
20% - Final Practical (student must make a 70% on practical)		_____
30% - Final Written Examination A student must make a 65% on the written comprehensive final. If a 65% is not achieved, the student may be allowed to take an alternate examination. If the student fails to make a 65% on the retake examination, the student will be required to do remediation, or repeat the clinical rotation.		_____
		_____
		<u>          </u> (Total Score)

**OPEN RESPONSE**

1. Brief Evaluation - Give main strengths, weaknesses or problems encountered during clinical experience.
  
  
  
  
  
  
  
  
  
  
2. Suggestions for improving individual's performance.

**Summary**

The student must achieve a minimum of 70% on the criteria for section 1 and 2 under competencies. A student who fails to achieve a 70% overall in any clinical rotation area must reapply to retake the specific clinical area in which the unsatisfactory grade has been obtained (refer to Medical Laboratory Technology readmission policy). The student may proceed with their assigned clinical rotation schedules and need only reapply to repeat the deficient area.

Evaluated by \_\_\_\_\_ DATE \_\_\_\_\_  
Supervisor/Evaluator Signature

Students comments regarding appraisal and counseling activity.

Reviewed with student by \_\_\_\_\_ DATE \_\_\_\_\_  
Signature

\_\_\_\_\_  
Student Signature DATE \_\_\_\_\_

## INCLEMENT WEATHER

- A. Students may sign up for the E-Safe text messaging notification system which will notify the student when there is an emergency, crisis situation or disaster or a weather emergency closing or delay. E-Safe is found on the college website [www.allegany.edu](http://www.allegany.edu).
- B. The following are the exact messages we will give the radio stations:
1. "Allegany College of Maryland classes begin at 10 a.m. (MWF) or 11 a.m. (T,TH) staff reports as usual."
  2. "Allegany College of Maryland classes and offices will open at (10 a.m. or 11 a.m.)."
  3. "Allegany College of Maryland classes (day/evening) have been cancelled, staff report at (the radio will give the designated time)."
  4. "College closed, staff need not report."
- C. Should the college be closed, lecture/lab classes will not be held. Should classes be delayed the student will start classes at the time designated in the announcement. MLT students are expected to report when the college opens even if that opening time is in the middle of a scheduled class session.
- D. For clinical rotation, students will also follow the college's closure or delayed opening schedule. However, if the college opens after 11:00 a.m., the clinical students do not report.

## **MEDICAL LABORATORY TECHNOLOGY READMISSION POLICY**

A student in the curriculum may withdraw due to poor academic performance, illness, or personal reasons. Students who withdraw are not guaranteed readmission. Readmission may be delayed due to the availability of clinical facilities and/or instructors. A student who wishes to be readmitted to the program must complete an Application for Readmission form. This form can be obtained from the Director of the Medical Laboratory Technology Program at Allegany College of Maryland.

The student's application for readmission will be reviewed according to the following guidelines:

Readmission priority will only be given to students who have withdrawn for medical reasons or are in good academic standing with a grade point average of 2.0 or above. A physician's written statement should document the need to withdraw. (Date of return must be within one year from withdrawal date.)

Persons withdrawing due to poor academic performance or personal reasons will be readmitted according to the Medical Laboratory Technology admissions policy regarding current students (designated other applicants). They will be ranked competitively according to GPA with all students eligible for admission into the Medical Laboratory Technology curriculum.

Any student withdrawing from the Medical Laboratory Technology Program must meet the minimum requirements for admission into the Medical Laboratory Technology Program before readmission will be considered.

**ALLEGANY COLLEGE OF MARYLAND**  
**APPLICATION FOR READMISSION TO THE**  
**MEDICAL LABORATORY TECHNOLOGY CURRICULUM**

Date: \_\_\_\_\_

**I. To be completed by student:**

I wish to apply for readmission to the Medical Laboratory Technology

Program and to re-enter the

Program \_\_\_\_\_ Semester, \_\_\_\_\_.

Name \_\_\_\_\_ Phone \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_  
Signature

**II. To be completed by Advisor:**

The above named student is reapplying for admission to the Medical  
Laboratory Technology Program. Please list the following information:

Semester G.P.A. \_\_\_\_\_

Cumulative G.P.A. \_\_\_\_\_

**III. To be completed by  
Program Director:**

Results of Readmission Review:

Approved \_\_\_\_\_ Date \_\_\_\_\_

Not Approved \_\_\_\_\_ Date \_\_\_\_\_

Reasons: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Notified by: \_\_\_\_\_ Date \_\_\_\_\_

## ACADEMIC GRIEVANCE POLICY

A student having a concern with a faculty member of an academic nature arising from participation in credit class should follow this process:

1. **Review the course syllabus and Academic Regulations.**  
Review the requirements and/or performance standards. Please take a few moments to make sure your concern is a valid one and is not based on inaccurate or incomplete information. Also please understand that this policy addresses issues of an academic nature, such as grades, attendance, or other academic issues relating to a course. This procedure must be initiated within 10 working days after occurrence. For issues that are non-academic in nature, students should refer to the appropriate College policy, which may be found in the Student Handbook.
2. **Talk with the faculty member.**  
You must talk with the faculty member about your concerns. Schedule a meeting with the faculty member and meet with him/her. Chances are good that you can resolve a misunderstanding or other concern at this meeting. If you are unable to resolve the issue with the faculty member, contact the Program Director/Division Chair/Coordinator within 10 working days after meeting with the faculty member by following the directions in Step 3. Written documentation may be requested. The faculty member has the right to meet with involved individuals throughout each step of this process.
3. **Contact the Program Director/Division Chair/Coordinator.**  
The director/chair/coordinator will verify that a meeting was held with the faculty member and then discuss the concern with you and the faculty member, either in person at the respective campus or by conference call. If unable to resolve the issue together, you may present your grievance to the Associate Dean of Instructional Affairs within 10 working days after you receive the decision of the director, chair, or coordinator by following the directions in Step 4. If the faculty member is the Program Director/Division Chair/Coordinator, see step 4.
4. **Contact the Dean of Educational Services.**  
If you are dissatisfied with the Director/Chair/Coordinator's decision, you **must** take the following actions:
  - Obtain the Academic Grievance Notice from the Office of the Vice President of Instructional Affairs, Student and Legal Affairs, your advisor or online.
  - Complete the Academic Grievance Notice. Include an explanation of why you believe the Director/Chair/Coordinator's decision was incorrect. Be specific.
  - Schedule a meeting with Associate Dean of Instructional Affairs
  - The Associate Dean will obtain signatures from the faculty member and Director/Chair/Coordinator and notify them about the meeting. In the event that the faculty and Director/Chair/Coordinator refuse to sign the form because the matter was not discussed with them, the form will be returned to the student and the student will be required to follow the procedures herein.
  - Meet with the Associate Dean of Instructional Affairs.
  - The Associate Dean will make a decision based on the information

contained in the Academic Grievance Notice and meetings with involved parties.

The Associate Dean notes his/her decision on the Notice (with copies provided to all parties, and a copy maintained in the files of the Associate Dean). If you are dissatisfied with the Associate Dean's decision, you may appeal the decision to the Vice President of Instructional Affairs within 10 working days by following the directions in Step 5.

**5. Contact the Senior Vice President of Instructional and Student Affairs.**

If you are dissatisfied with the Associate Dean's decision, you **must** take the following actions:

- Submit a copy of the original Academic Grievance Notice with the Associate Dean's decision to the Vice President of Instructional Affairs.
- Include an explanation of why you believe the Associate Dean's decision was incorrect. Be specific.
- Schedule a meeting with the Vice President of Instructional Affairs.
- Meet with the Vice President of Instructional Affairs.
- The Vice President will make a decision based on the information contained in the Academic Grievance Notice and meeting with involved parties.

The Vice President notes his/her decision on the Notice (with a copy to the faculty member, Director/Chair/Coordinator, Associate Dean, and a copy for the record.) If you are dissatisfied with the Vice President's decision, you may appeal that decision to the President within 10 working days after receiving the decision of Vice President of Instructional Affairs by following the directions in Step 6.

**6. Contact the President.**

If you are dissatisfied with the Vice President's decision, you **must** take the following actions:

- Submit the Academic Grievance Notice with the Associate Dean's and Vice President's decisions to the President.
- Include an explanation of why you believe the Vice President's decision was incorrect. Be specific.
- Schedule a meeting with the President.
- Meet with the President.
- The President will make a decision based on the information contained in the Academic Grievance Notice and meetings with involved parties.

The President notes his/her decision on the original Notice (with a copy to the faculty member, Director/Chair/Coordinator, Associate Dean, Vice President, and a copy for the record.)

**The President's decision is final.**

## STUDENT COMMUNICATION POLICY

### Background

Allegany College of Maryland must have efficient and timely methods of communicating with students. The advancement of technology facilitates communication while simultaneously saving money. These advances permit information to be shared quickly and easily for the benefit of students and the College generally; the College is committed to promoting effective communication campus-wide.

Allegany College of Maryland recognizes importance, frequency, and ease of students' communication with fellow students, College officials, and members of the public. Allegany College of Maryland also recognizes the widespread use of the internet and electronic devices to interact with other people through text, images, and sound. While these media have numerous positive benefits for students, technology carries risks such as:

- interference with orderly academic endeavors,
- inappropriate disclosure of confidential information,
- inappropriate disclosure of personal information and/or photographs,
- inappropriate and/or unauthorized publication(s),
- dilution of professional, academic relationships,
- damage to the College's reputation in the community,
- damage to personal relationships,
- violations of the Code of Student Conduct,
- violations of local, state, and federal laws such as copyright or trademark infringement,
- civil liability for torts such as defamation,
- violations of website rules / terms of service, and
- jeopardizing future employment.

### POLICY

Whenever possible, Allegany College of Maryland will communicate with students electronically. Examples include email, E-safe, college website, other internet presence, and student portal; this policy shall apply to new technological methods of communication as they are developed and adopted. The College will provide the necessary infrastructure for appropriate tools. (See Technology Resources Policy for details.) Such methods of communication shall constitute official communication by the College and may replace paper communication wherever paper communication had previously been required and/or used.

\*\* All College employees are strongly encouraged to use electronic means to communicate with students.

\*\* All students are required to monitor their College electronic communication tools regularly and frequently; it is the students' responsibility to read all communications and to respond as necessary.

As members of the College and the larger community, students are expected to communicate with others using the means and manner consistent with the standards of an institution of higher education; Allegany College of Maryland is a place of learning, and activity which inhibits or interferes with learning or other College functions will not be permitted.

Students shall not use any means of communication to abuse, harass, threaten, bully, or otherwise harm any person. (See Code of Student Conduct for details.)

**Students shall not use any means of communication to disrupt instruction, learning, or other College functions; likewise, priority shall be given to uses of electronic communications and/or technology which promote academics.**

The personal use of the internet and/or electronic devices by students **outside the classroom or other learning sites** shall not be infringed; such **personal** use shall not constitute official College communication, and the College is not responsible for the content of students' personal communications. However, the College reserves the right to act upon personal student communications when such communication has a negative impact upon any official function of the College including instruction, health, safety, and public relations. Nothing in this policy shall be construed to restrict any person's right to avail themselves of civil remedies.

Students shall not use the College's logo(s), trademarks, letterhead, or other intellectual property without prior consent from the authorized College official. Students shall not create an internet presence or a publication that purports to be official or authorized by the College without prior consent from the authorized College official.

Related Allegany College of Maryland policies maintain their full force and purpose (eg., Technology Use Policy, First Amendment Policy, FERPA, HIPAA, career program curricula/handbooks, Code of Student Conduct, etc.).

## **MEDICAL LABORATORY TECHNOLOGY**

### **EXPOSURE CONTROL PLAN**

Exposure control policies and procedures are available electronically on each Blackboard course site. Students are expected to read and follow the appropriate measures when performing laboratory exercise in the MLT classroom AH 251.

The following policies are available under the exposure control plan:

- Bloodborne Pathogen Exposure Control Plan
- Chemical Hygiene Plan
- Laboratory Infectious Waste Disposal
- Management of Hazardous Chemicals
- Medical Waste Disposal

## CODE OF STUDENT CONDUCT

### **I. Philosophy**

Allegany College of Maryland, hereinafter referred to as “the College” is an institution of higher learning dedicated to excellence; as stated in the College’s mission statement, “Our focus is the preparation of individuals in mind, body, and spirit for lives of fulfillment, leadership, and service in a diverse and global society.” Consequently, the College accepts its responsibility to provide a meaningful, safe, educational environment not only in the classroom but also in the library, in the residence halls, in the cafeteria, in the gym, and anywhere else we find students, faculty, staff, and visitors. To fulfill that responsibility, the College presents this Code of Student Conduct, which demands high standards in our Core Values: Respect, Integrity, Opportunity, Wellness, and Quality.

### **II. Authority**

Allegany College of Maryland’s Board of Trustees adopts the Code of Student Conduct, and any changes to it must be approved by the Board of Trustees.

### **III. Jurisdiction**

The Code of Student Conduct applies to all students on any of the College’s campuses\* and to all students whose off-campus conduct (whether or not affiliated with the College or any College-sponsored activity) adversely affects the student’s fitness to be a member of the College community or is detrimental to the aims and objectives of the College. The Code of Student Conduct applies to any conduct that occurs from enrollment (including between semesters) until the student graduates, withdraws from the College, or transfers to another institution without enrolling for further coursework at the College.

\*Main campus in Cumberland, Maryland; the Gateway Center in Cumberland, Maryland; Somerset County campus in Somerset, Pennsylvania; Bedford County campus in Everett, Pennsylvania; and Bedford County Technical Center in Everett, Pennsylvania.

The ACM Student Handbook contains the policies and procedures which serve to describe the College’s expectation for student conduct. The complete student handbook can be downloaded at <https://www.allegany.edu/student-handbook/StudentHandbook201920.pdf>. The MLT handbook supplements the College expectations of student conduct. The two handbooks collectively apply to all MLT students. The College policies which can be found in the ACM Student Handbook include:

- Personal Interactions
- Respect for Property
- Health and Safety
- Peace and Order
- Housing Regulations
- Enforcement of Policies
- Student Discipline
- Offenses against Health and safety
- Offenses against Peace and Order
- Offenses against Housing
- Disciplinary Procedures

## FERPA

### **I. The Family Educational Rights and Privacy Act (FERPA) Policy**

(The following policy is applicable to all Allegany College of Maryland faculty and staff) The Family Educational Rights and Privacy Act (FERPA) is a Federal law that protects the privacy of student educational records. The law applies to all schools that receive funds from the U.S. Department of Education. As implied by the title, FERPA requires schools to protect the **privacy** and **access** rights of students regarding their educational records. There are limitations on what information a school may disclose and mandates on when students may inspect, review, and seek to amend their own records. Since many FERPA terms are broad in nature and can be subject to interpretation, the President's Staff, with input from faculty and staff, has defined these terms as they will pertain to Allegany College of Maryland, and has identified and addressed how all college faculty and staff should respond in certain situations.

### **INSTITUTIONAL DEFINITIONS**

Directory information – Directory information is information that *can be* disclosed about a student and includes the following: student name, address, field of study, degree/awards, and full-or part-time status. Address will only be disclosed when circumstances warrant it. This policy adds address to “directory information”. (NOTE: The fact that this information *can be disclosed* does *not require* the College to do so.)

Educational record – Education records are all records that are directly related to a student and are maintained by an educational agency, an institution, or a party acting for the agency or institution.

Emergency – Emergency is any incident that poses a health risk or threat of imminent danger, physical violence, or intimidation.

Enrolled student – A student is considered to be “enrolled” once the Registration Office has processed the registration forms and the schedule is either provided to the student or made available to him/her online. While *applicant* information is not protected by FERPA, the College will not release it without proper authority.

### **DESIGNATED INSTITUTIONAL CONTACTS**

FERPA questions should be directed to the Director of Admissions and Registration. If s/he is unavailable, the Associate Registrar should be the contact. In Pennsylvania, the Coordinator of Academic Services is the contact for both campuses. If necessary, the Vice President of Student and Legal Affairs may be consulted for responses to legal questions.

The Student Services Appeals Committee will hear student complaints and petitions to amend educational records.

### **DISCLOSURE OF STUDENT INFORMATION**

Educational records are “owned” by the student when he/she turns 18 **or** enrolls in college. However, grades may be disclosed to parents of dependent students only after written verification of dependency status has been obtained from the parents; i.e., copy of the 1040 federal tax return or signed release form obtained from the Admissions/Registration Office.

When an inquiry about a student is made by a faculty/staff member, the person who has the information should disclose that information only after assessing the request and determining its legitimacy as a “need to know.” The “holder” of the information will make that determination.

Student information should not be disclosed over the phone to the students’ family members or others, since one cannot be sure with whom he/she is actually speaking.

### **MAINTENANCE OF STUDENT RECORDS**

Grades, rosters, and disciplinary records are kept indefinitely. All other centralized institutional records should be kept for five (5) years. Individual departments should establish their own policies for the length of time students records are to be kept.

### **ALUMNI**

Educational records of alumni are subject to FERPA regulations. Records of Foundation contributions are public record and may be revealed. Anything that occurs after graduation is considered directory information and, thus, not covered under FERPA.

### **EMERGENCY SITUATIONS and/or DISCLOSURE OF INFORMATION TO LAW ENFORCEMENT**

Information regarding health/safety emergencies may be disclosed without consent, with *emergency* being defined as stated above.

In the event of an on-campus emergency,\* the College may call the emergency contact, as this information is provided at registration time.

\*Or emergency that occurs off-campus during/associated with a college-sponsored activity.

If a crime or threatening situation occurs on campus, (e.g., fight or breaking and entering) *and* a College employee calls the authorities or agrees with a non-employee’s decision to call the authorities, then the College will provide requested information to the police. Requests for information will be honored within 24-hours of the call. If the investigation is on-going, requiring longer than a 24-hour period, then the concern is not as urgent, and the College will not release student information without a properly issued subpoena or court order.

If a law officer comes to the campus to locate a student, the officer must present a subpoena to the Director of Admissions/Registration or designee, **if** the incident for which he is seeking the student occurred off-campus and/or **is not** an emergency to us (see *emergency* definition above).

## **POLICY STATEMENT ON THE RELEASE AND CONFIDENTIALITY OF STUDENT RECORDS**

Allegany College of Maryland affirms that a student's official educational records are confidential matters. The College adheres to the Family Educational Rights and Privacy Act regarding inspection, release or disclosure, and providing an opportunity to correct entries. The College's Policy is set forth in full in the Academic Information section of the annual catalog, and students are encouraged to familiarize themselves with all aspects of their privacy rights and responsibilities. In brief, the Family Educational Rights and Privacy Act and the College Policy provide students the right to:

- Inspect and obtain copies of information contained in their education records.
- Prevent disclosure of "directory information," such as name, address, major field of study, etc.
- Have educational records treated as confidential.
- Challenge the contents of educational records.
- File complaints with the U.S. Department of Education concerning alleged failures of Allegany College of Maryland to comply with the law.
- Obtain a copy from the Allegany College of Maryland's Registration Office.

### **Procedures for Students to Review Their Academic Record**

Any student of Allegany College of Maryland who wishes to review their academic record may do so according to the following procedure:

Step 1 - Obtain the "Request to Review Permanent File" available from the Registration Office.

Step 2 - Complete the form indicating the specific materials to be reviewed and return the completed form to the Registration Office.

Step 3 - Once the request is filed, the student will be notified in writing within thirty (30) days of a time and date the file may be reviewed.

Step 4 - The student will review the file with the Director of Admissions & Registration. It should be noted that students may obtain a student copy of their transcript at any time by filing a request with the Registration Office.

### **ACM MLT PROGRAM TEACH OUT POLICY**

In the event that there is a catastrophic event and the MLT coursework could not be delivered at the Cumberland Campus, the first contingency plan would to assess the College infrastructure and if at all possible continue courses through the use of technology delivered lectures. If the College's other campus buildings or locations in Pennsylvania remain intact, lab locations could be sought for the laboratory portion of didactic and clinical courses. If Allegany College of Maryland's infrastructure is so depleted that offering the courses are impossible, then the Allegany College of Maryland MLT program would reach out to other Maryland MLT Programs for assistance in providing the opportunity for current students to complete the program.

In the event that one or more clinical affiliates are unable to accommodate students due to catastrophic event, the Program officials will work with the remaining affiliates to try to place students. There are also a number of hospitals and small clinic labs in the tri-state area that could be explored as a possible new affiliate for Hematology and Clinical Chemistry rotation.

In the event of a rapid program closure, the Program Director will complete a recommended completion plan for each student enrolled in the clinical phase of the Program and present a comprehensive plan for this completion to the Senior Vice-President of Instructional Affairs and the College President. This plan must be completed within 30 days of closure notification. In the event of immediate program closure, the Allegany College of Maryland MLT Program Director will seek opportunities for current students in tri-state area MLT programs.

These policies become effective with the Fall semester of 2018. The policies have been approved by the following individuals:

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Stacey Rohrbaugh  
Director, Medical Laboratory Technology Program

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Date

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Dr. Kurt Hoffman  
Senior Vice President of Instructional  
and Student Affairs

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Date

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Dr. Bill Rocks  
Dean of Career Education

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Date

**Accredited by the  
National Accrediting Agency for  
Clinical Laboratory Sciences  
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**<http://www.naacls.org>**