

Virginia Western Community College

MDL 290

Coordinated Practice in the Clinical Laboratory

Prerequisites

Successful completion of all MDL Program-related courses with a grade of "C" or better.

Course Description

Supervised on-the-job training in selected business, industrial or service firms coordinated by the college.

Semester Credits: 5 Lecture Hours: 0 Lab/Clinical/Internship Hours: Variable
Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

Introduces students to the workings of a hospital clinical laboratory, this is the clinical rotation component of the VWCC Medical Laboratory Program. Students will rotate through all areas of the hospital laboratory, including Clinical Chemistry, Clinical Hematology/Coagulation, Blood Bank, Special Testing, and Clinical Microbiology and Parasitology/Virology. The clinical practicum gives students the opportunity to work with sophisticated instrumentation, and learn how to adequately handle the flow of work in a hospital clinical environment. The clinical component provides an opportunity for the student to apply theories and techniques learned in the didactic courses to the actual testing of patients' blood and body fluids in the hospital environment.

Required Materials

Textbook: NA

Supplementary Materials:

- MLT Program handbook
- Review materials for the registry will be provided and discussed

Course Outcomes

At the completion of this course, the student should be able to:

- Operate sophisticated laboratory equipment in all areas of the clinical laboratory, including Hematology/Coagulation, Clinical Chemistry and Urinalysis, Clinical Microbiology, and the Blood Bank.
- Differentiate and recognize pre-analytical, analytical, and post-analytical sources of error, with the emphasis on the analytical and post-analytical components in the clinical laboratory setting.
- Recognize the importance of performing delta checks on automated results. Recognize mistakes or discrepancies and take appropriate corrective actions.
- Adequately perform basic quality control and quality assurance practices to ensure that instrument generated results are accurate and precise.

- Maintain a professional disposition and communicate effectively with other laboratory and hospital personnel, and the patient.
- Demonstrate competency in the performance of routine laboratory procedures. Demonstrate the ability to work cooperatively with the laboratory staff. Follow verbal instructions. Organize work to achieve maximum efficiency.
- Properly handle multitasking so that several tests can be accomplished in the same timeframe, without compromising quality of the laboratory results. Respond to high volume or stat pressures with organization and efficiency.
- Display professional integrity including the confidentiality of all patient information.
- Understand how to best prepare for the MLT registry examination having gained self-knowledge from participating in practice registry exams.

Attendance:

Attendance is mandatory for all assigned clinical rotations/ sites. Absences will be discussed on a case-by-case basis; however, it is expected that this would be due to exceptional circumstances. If you will be late or cannot attend on a specified day due to extraordinary circumstances, then you must immediately notify the clinical site via phone and notify the clinical course instructor by email. Contact information for the clinical sites is listed on the rotation schedule. Missed clinical days may result in the student being dismissed from the program.

Grading:

Students must obtain a grade of "C" or better in this course.

The grading scale is as follows:

A = 90-100%	D = 60-69%
B = 80-89%	F = < 60%
C = 70-79%	

Methods of evaluation:

Section Checklists (using approximate registry exam weighting)	20%
Student Evaluations (by clinical site)	60%
Participation in practice registry exam(s) and review sessions,	
Attendance	10%
Weekly journals, case studies, discussion boards, papers, etc.	10%

All checklists and evaluations must be submitted by the due date. At least ONE checklist and evaluation MUST be received for each clinical rotation area: chemistry, hematology /coagulation, bacteriology / parasitology, blood bank, immunology, specials, urinalysis/ body fluids, and phlebotomy*. Multiple checklists/ evaluations may need to be submitted (ie one for CRMH and 1 for LGH). **Failure to submit all clinical paperwork may result in the student receiving an incomplete for the course.**

*Note: The Phlebotomy checklist is not applicable to students with prior phlebotomy certification and/or clinical experience.

Make-up / Late-work Policy:

Submit assignments ON TIME. As responsible learners, you need to manage your learning schedules

and finish all assignments on time. Assignments submitted past the stated due date will be lowered one letter grade per day late. A grade of "0" will be given for any assignment not turned in.

Make up- there are several days at the end of the clinical rotation schedule for make-ups. This is to allow students an opportunity to get checklist / evaluations finished due to unforeseeable circumstances or oversight (ie forgot to get lab staff sign- off on a checklist, etc.). It is the student's responsibility to arrange make-up time with the clinical sites.

Academic Integrity and Laboratory Ethics:

All students are expected to:

- abide by the VWCC Student Conduct and Honor Code (as found in the VWCC handbook),
- abide by the MLT handbook requirements,
- abide by the clinical rotation schedule and other clinical site requirements, and
- demonstrate Laboratory Professional Ethics.

All work should be conducted accordingly. If a student violates this policy, the penalty will be determined by the instructor and Program Head and may lead to dismissal from the program.

Academic integrity is vital to our educational system and there is ZERO tolerance for any deviation from this policy. The entire policy may be accessed through:

[Student Conduct :: Academic & Student Affairs Policies :: VWCC \(viriniawestern.edu\)](http://www.viriniawestern.edu/StudentConductAcademicStudentAffairsPolicies)

Laboratory Integrity:

During clinical time, students are expected to conduct themselves ethically and with integrity. Expectations for laboratory professionals are explained in the Laboratory Code of Ethics and can be accessed at this site: <https://ascls.org/about-us/code-of-ethics>

General Policies / Student Conduct

This course is conducted according to the guidelines specified in the Virginia Western Community College Student Handbook, the MLT Student handbook, as well as requirements of the clinical sites. To get to the student conduct policy, go to www.viriniawestern.edu, click on student services, click on student activities, then click on Student Handbook and go to section 5. Please refer and consult these documents for policies and regulations involving student conduct policy, academic honesty, dropping courses, incomplete work, etc.

The syllabus and other pertinent messages for this course will be posted on Canvas. Please use this resource regularly to stay updated. Also, please check your VWCC email frequently regarding pertinent issues. Please feel free to contact your instructor at any time during the semester to discuss any problems, or to further your knowledge on any of the topics discussed.

Instructor will keep a daily record of attendance. Students will be dropped from the course if they cease attending before the withdrawal deadline, or when the total amount of unexcused absences are greater than 20% of the total instructional time.

Electronic Devices in the Classroom and Clinical Environment:

[MLTStudentHandbook.pdf \(viriniawestern.edu\)](http://www.viriniawestern.edu/MLTStudentHandbook.pdf)

Dismissal from MLT Program: [MLTStudentHandbook.pdf \(viriniawestern.edu\)](http://www.viriniawestern.edu/MLTStudentHandbook.pdf)

Topical Description

Coordinated Practice is the clinical component of the Medical Technology Program. Students will spend time in each major area of the hospital clinical laboratory, where they will work alongside of a clinical supervisor. Students will be expected to perform routine laboratory tests on patient samples, as if they were employed by the laboratory as a medical laboratory technician. Students will rotate through the four main areas of the clinical laboratory, spend time in both larger and smaller clinical laboratories, and phlebotomy. Since most areas of today's clinical laboratory are highly automated, especially clinical chemistry and hematology, the student will be expected to gain experience in the programming and analysis of routine patient tests on these instruments. Aside from simply learning how to use the instrumentation, students should also learn basic troubleshooting and common causes of erroneous results, such as low sample volumes, clotting of samples, and inappropriately collected blood, urine and body fluid samples. The clinical areas of rotation are listed below along with some select testing that will be done by students in each area (this list is not all-inclusive):

I. Clinical Chemistry and Urinalysis

- Basal Metabolic Panel (BMP)
- Comprehensive Metabolic Panel (CMP)
- Electrolyte Panel
- Blood glucose
- Hemoglobin A1C
- Cardiac enzymes
- Liver Panel
- Tumor markers
- Renal Panel
- Thyroid Function Panel
- Therapeutic Drug Monitoring (TDM)
- Complete Macroscopic and Microscopic Urinalysis

II. Clinical Hematology and Coagulation

- Complete Blood Count (CBC)
- White Blood Cell Differential Count
- Reticulocyte Count
- Erythrocyte Sedimentation Rate (ESR)
- Test for G6PD Deficiency
- Prussian Blue Stain
- Wright's Stain of Bone Marrow Aspiration
- Cytospin of Cerebrospinal Fluid
- Prothrombin Time (PT)
- Partial Thromboplastin Time (PTT)
- Thrombin Time
- Fibrinogen
- Fibrin Degradation Products
- Levels of Clotting Proteins
- Platelet Function
- Hemoglobin Electrophoresis (Including Hemoglobin A2 and Hemoglobin F)

- Heinz Bodies
- Schilling Test
- Osmotic Fragility
- Leukocyte Alkaline Phosphatase (LAP Score)

III. Clinical Microbiology and Parasitology

- Gram staining
- Proper plating of bacteria onto various media for identification
- Identification of pathogenic bacteria in blood cultures
- Identification of pathogenic bacteria in urine, feces, sputum, joint aspirates, tissue samples and cerebrospinal fluid
- Determination of antibiotic resistance
- Workup of acid-fast bacilli
- Molecular methods in bacterial identification
- Preparation of fecal samples for parasite identification
- Methods of identifying parasites in human specimens

IV. Blood Bank

- Receipt of reagents and supplies
- Reagent organization, storage and management
- Daily start-up and as needed reagent quality control
- Verify test requisition(s) and assess sample suitability
- Receipt of blood components
- Discuss/observe/ perform ABO/Rh typing
- Discuss/observe the detection and resolution of ABO/Rh typing discrepancies
- Discuss/observe/perform direct Antiglobulin testing (DAT)
- Discuss/observe/perform antibody detection and antibody identification techniques
- Discuss/observe/perform antibody screening and antibody resolution techniques
- Discuss/observe any available Special Testing/ Chemical Techniques performed by the blood bank
- Discuss/observe any available Adsorption techniques
- Discuss/observe/perform crossmatching and labeling of units for transfusion
- Testing involved for HDFN
- Rh immune globulin workup
- Workup for neonatal transfusion

Note to Instructors

- Registry review sessions and practice registry exam(s) will be given during this course

[ADA Statement](#) (PDF)

[Title IX Statement](#) (PDF)