

**MERCER COUNTY COMMUNITY COLLEGE  
COURSE OUTLINE  
Revised Spring 2008**

MLT 215  
Course Number

10  
Credits

Clinical Practice  
Course Title

720 Hours  
Clinical Facility

Science and Allied Health  
Division

Text: Title: Outline Review of Medical Technology/Clinical Lab Science  
Author: Leach and Ryman  
Publisher: Prentice Hall: 2004 1st edition

Text: Title: NCA Review for the Clinical Laboratory Sciences  
Author: Beck, Susan  
Publisher: Lippincott: 2002 4th edition

Text: Title: Outline Review of Clinical Chemistry  
Publisher: Appeton-Lange (optional)

Methods of Instruction: Supervised observation and performance of laboratory analysis in assigned clinical facilities.

Methods of Evaluation: Assignments, clinical laboratory performance, professional attributes, practical exam performance, and knowledge of each technical discipline.

18 weeks/5 days per week/8 hrs. per day - 2007  
Course extends from March through July

Catalog Description

MLT 215 Clinical Practice  
Prerequisite: MLT 205

Clinical practice in an approved facility under the direction and supervision of laboratory educators. Students will conduct routine analytical procedures, develop their laboratory skills, apply knowledge gained in the program, and have the opportunity to demonstrate their acquired laboratory competencies.

### Course Goals

At the completion of the course the student will be able to:

Demonstrate acceptable performance of practical work skills in the clinical laboratory. This includes acceptable work habits and skills as well as demonstration of knowledge of common lab procedures.

Apply the basic concepts and principles learned in the didactic portion of the Curriculum to current methodologies used in today's clinical laboratory.

Properly, accurately, and safely use the equipment and instruments appropriate for each laboratory procedure.

Gain the experience and skills in the clinical laboratory necessary for MLT career entry-level competencies.

Demonstrate knowledge of educational methodologies in the preparation, development and presentation of a case study.

### Exit Level Skills

Upon successful completion of the clinical rotation the student will be able to:

1. Apply knowledge learned in the medical technology curriculum.
2. Process samples according to lab protocol and safety standards.
3. Perform routine lab analysis.
4. Identify normal and abnormal lab results.
5. Safely and accurately operate, calibrate, and control lab instruments and equipment.
6. Use computers and laboratory software effectively.
7. Assess laboratory results and data used to evaluate test results.
8. Recognize problems or laboratory findings which may result in sources of error.
9. Correlate lab results to common disease states.
10. Demonstrate professional and ethical behaviors including understanding of HIPAA and patient confidentiality issues.
11. Demonstrate laboratory skills and knowledge applicable to the entry level competency of a Medical Lab Technician as stated in the MLT student handbook.
12. Prepare and orally present a case study demonstrating knowledge of laboratory test procedures and clinical correlation of laboratory test results.

Specific objectives for each clinical rotation:

### **URINALYSIS PERFORMANCE OBJECTIVES**

At the end of the rotation the student will be able to:

1. Determine specimen acceptability.
2. Prepare specimen for analysis.
3. Perform and record routine instrument, equipment and reagent set up, quality control, and maintenance.
4. Perform macroscopic examination of urine.
5. Perform microscopic examination of urine.
6. Perform confirmatory tests on urine.
7. Interpret and report results of urinalysis.

### **HEMATOLOGY AND COAGULATION PERFORMANCE OBJECTIVES**

At the end of the rotation the student will be able to:

1. Explain the essential safety practices used in the Hematology/Coagulation departments.
2. Organize, process, handle patient specimens using proper procedures for specimen collection and storage.
3. Describe instrument principles, start-up, operation, workload processing, and basic instrument troubleshooting.
4. Interpret and correlate histograms.
5. Prepare stain and evaluate blood smears, normal and abnormal differentials.
6. Perform and evaluate body fluid smears.
7. Perform special hematology procedures, manual cell counts, ESR, and sickle cell preps.
8. Perform and evaluate coagulation tests, ex. PT and PTT.
9. Know reference range values and critical values for tests performed in the hematology/coagulation department.
10. Explain the factors involved in the quality assurance program in the hematology/coagulation department.

**IMMUNOHEMATOLOGY PERFORMANCE OBJECTIVES**

At the end of the rotation the student will be able to:

1. Apply universal precautions and understand laboratory safety appropriate in the blood bank.
2. Perform ABO forward and reverse typing; perform Rh typing.
3. Perform antibody screen and antibody identification by using panel cells and rule out technique.
4. Select donor units and perform compatibility testing.
5. Perform DAT testing and an elution study.
6. Understand the selection and criteria for transfusion component therapies: fresh frozen plasma, platelets, and cryoprecipitate.
7. Perform quality control procedures and be knowledgeable of AABB regulations for a transfusion service or blood bank.

**MICROBIOLOGY PERFORMANCE OBJECTIVES**

At the end of rotation the student will be able to:

1. Use universal precautions and safety measures appropriate to the microbiology lab.
2. Demonstrate knowledge of specimen collection and culture support.
3. Demonstrate knowledge of criteria used for specimen evaluation for acceptance/rejection.
4. Organize specimen processing and computer/worksheet data entry and result recording.
5. Perform time processing of clinical specimen, select appropriate primary media and conditions for incubation.
6. Perform and interpret gram stains, and direct smears.
7. Observe and interpret primary cultures.
8. Describe the selective, differential media and the biochemical identification system used to classify the organisms.
9. Differentiate normal flora pathogens from different cultures sources.
10. Perform antibiotic susceptibility testing.
11. Perform quality control procedures.
12. Know critical values in the microbiology laboratory.

**CHEMISTRY PERFORMANCE OBJECTIVES**

At the end of the rotation the student will be able to:

1. Understand chemistry safety and practices safety requirements.
2. Perform quality control procedures, monitor Q.C. results, and understand corrective action if Q.C. is not within standardized limits.
3. Organize workload and perform specimen evaluation.
4. Prepare samples for processing.
5. Perform instrument programming and calibration.
6. Perform routine assays with instruction and supervision.
7. Understand basic maintenance and troubleshooting of instruments.
8. Perform or observe special chemistry procedures performed in the affiliate site.
9. Understand criteria to accept/reject results, perform delta checks and know when and how to perform dilutions.
10. Demonstrates knowledge of normal values, critical values, correlate results with common disease states and identify common chemistry profiles.

**PHLEBOTOMY PERFORMANCE OBJECTIVES**

At the end of the rotation the student will be able to:

1. Demonstrate safety practices that apply to phlebotomy procedures.
2. Perform phlebotomy procedures by venipuncture technique.
3. Maintain patient confidentiality and HIPAA policies as established at the medical facility.

## CLINICAL PRACTICE EVALUATION

1. Evaluation on the basis of technical performance skills, a practical (competency skill assessment) and problem solving, critical thinking skill evaluation and professional attributes.
2. Performance and completion of clinical questions.
3. Preparation and presentation of a case study.
4. The practical exams for each respective rotation (heme/coag, chemistry, microbiology, and immunohematology) must be performed to the following competency levels:
  - A. Immunohematology

All ABO and Rh (forward and reverse)  
Ab screen  
Choice of donor units  
The above must be performed to the 100% competency level.
  - B. Hematology

The practical exam for hematology must be performed to the 80% competency level.
  - C. Microbiology

The practical exam for microbiology must be performed to the 80% competency level.
  - D. Clinical Chemistry

The practical exam for clinical chemistry must be performed to the 80% competency level.
  - E. Urinalysis

Urinalysis exams must be performed to the 80% competency level.

The student will be evaluated for grade equivalency at the completion of each department rotation. At the completion of each rotation the student will receive a grade for that department based on technical skill performance, practical (competency) skill performance, problem solving/ critical skill evaluation and the professional skills and attributes of the student. The average of the grade from all the departments (Heme, Micro, Blood Bank and Chemistry) will be recorded on the final clinical evaluation form.

90% of the final grade is computed as the average of the final scores received in Hematology, Clinical Chemistry, Blood Bank, Urinalysis and Microbiology. The remaining 10% of the final grade for this course is the evaluation of the case study, developed and presented during the clinical practice.

### Attendance Policy

Attendance records will be maintained at the clinical facility. Full attendance is required to successfully complete each department's clinical rotation. Any day of absence must be reported by a phone call to the hospital department where you are assigned. Note the time and person in the lab with whom you left the message and also report your absence to the college at the MLT phone number, 609-586-4800 ext 3887. Any absence must be made up. Make up times for absence will be with consent and by contractual agreement with the clinical department educators. More than 3 absences from the clinical rotation will require clinical consultation and may result in withdrawal from the clinical course.

Make up time for absence from clinical may extend the clinical practice course beyond the 18-week period. The extension of time is only allowed with contractual agreement with the clinical facility. Students must complete MLT 205 by August 2007.

### Lateness Policy

Absence and lateness will be recorded. More than two (2) lateness's will begin to deduct points from the total averaged clinical grade. Two (2) points will be deducted for each lateness. A pattern of lateness will result in withdrawal from the course.

### Case Study

Each student will develop and orally present a case study in Hematology or Chemistry. As you develop the case study please use the following guidelines.

- Gather information from a patient who presents with some abnormal lab results related to a disease or clinical condition.
- Speak to a department supervisor for help in searching for data with this project.
- See if there are lab tests from another department on this patient.

The case study must be:

- Typed, Power Point Presentation preferred.
- Titled
- demographics (age, gender, admitting diagnosis if known) keep patient confidentiality – no names or identifying numbers or records
- laboratory data on patient
- correlation of lab data to clinical condition...if known
- correlation of lab data to a clinical diagnosis
- look up other tests that can be performed for the disease or clinical condition...state what the tests are and what abnormal values might show
- your case study must include a presentation on the method and procedure of one of the laboratory tests included in your report. You must be able to communicate this knowledge in a manner which shows your understanding of the procedure and shows your ability to teach the procedure to others.
- arrange your presentation in the order as stated above. You must include at least 2 supplemental resources or visual aids, ex. power point, handouts, blood smears, electrophoresis patterns, whatever is needed to support your findings
- presentation – organized, presented with clarity in both the written and oral presentation
- this presentation will be scheduled during the month of June or July.
- Professional laboratory staff will be invited to participate in the presentation and evaluation.

Final Evaluation Point Value

A 93-100  
 A- 90-92  
 B+ 87-89  
 B 83-86  
 B- 80-82

Grade Equivalent

C+ 77-79  
 C 70-76  
 D 60-69  
 F below 60

Completion of all assignments is necessary for grade evaluation. Adherence to the policies of the clinical rotation section of the MLT student handbook is necessary for completion of the course and grade evaluations.

Academic Integrity Policy:

Any student who (1) knowingly represents the work of others as his/her own, (2) uses or obtains unauthorized assistance in the execution of any academic work, and (3) gives fraudulent assistance to another, is guilty of cheating. Violators will be penalized in accordance with established college policies and procedures. MLT students must conform to the policies and regulations of the clinical affiliate and the policies and regulations as described in the MLT Program handbook. Breach of patient confidentiality will result in failure of the clinical practice course and dismissal from the MLT program with no allowance for readmission. Professional behaviors and conduct are expected. Cell phones use is restricted to break times; this phone policy will be enforced.