MLT 130 - Clinical Immunology/Immunohematology Practicum

Approval Date:  Effective Term:

Department: MEDICAL LABORATORY TECHNICIAN
Division: Allied Health/Public Safety
Units: 3.00
Grading Option: Letter Grade
Transferability: CSU Transferable
Course is: AA/AS Degree
Repeatability: 

Contact Hours per Term:
Lab: 9.00

Associate Degree GE Applicability: No
Recommended Class Size: 15
-Rationale: Station limitations.

Discipline/Minimum Qualifications:

Catalog Description:
Provides entry-level clinical laboratory experience in the serology and blood banking departments, emphasizing technique, accuracy, and precision.

Schedule Description:
Provides entry-level clinical laboratory experience in the serology and blood banking departments, emphasizing technique, accuracy, and precision.

Student Learning Outcome:
1. Compare and contrast clinical serology and blood bank tests and principles.
2. Perform and interpret serology and blood bank procedures at a level acceptable to the supervising Clinical Laboratory Scientist.

Course Objectives:
1. Practice departmental procedures for safety according to Occupational Safety and Health Administration (OSHA) mandates.
2. Demonstrate safe use and disposal of biohazardous materials.
3. Explain departmental organization to include specimen processing and handling, criteria for specimen rejection and use of the laboratory information system (LIS).
4. Demonstrate proficiency in the operation of automated or semi-automated instrumentation.
5. Perform and interpret all blood bank (immunohematology) procedures with 100% accuracy. Confirm results with supervising Clinical Laboratory Scientist.
6. Observe and discuss with supervising Clinical Laboratory Scientist, a transfusion reaction workup at the clinical site.

**Course Content Outline:**

A. Standard Precautions as they apply in the Clinical Urinalysis laboratory according to Occupational Safety and Health Administration (OSHA) mandates.
   1. Basic aspects of infection control policies, including how and when to use personal protective equipment (PPE) or devices (gown, gloves, and goggles).
   2. Use PPE in Urinalysis laboratory.
   4. Pre and post exposure prophylactic measures for handling potentially occupational transmission of certain pathogens.
   5. Disinfectants used to decontaminate the work area when a hazardous spill has occurred or when beginning or ending a laboratory session.
   6. Basic steps in first aid.
   7. Issues in a Safety Program:
      a. Evacuation routes,
      b. Biohazardous material,
      c. Blood borne pathogens,
      d. Standard precautions,
      e. Aerosols,
      f. Location of MSDS (Material Safety Data Sheets).
      g. Location of fire alarms and extinguishers.
      h. Location of eye wash stations and emergency showers.
      i. Location of spill kits.
      j. Location of other safety equipment.
B. Safe use and disposal of biohazardous material.
   1. Segregation and disposal of various types of waste products generated in the clinical laboratory including the use of sharps containers for needles, lancets, and/or other sharps.
   2. Disposal of biological samples.
   C. Departmental organization including specimen processing and handling, criteria for specimen rejection and use of the laboratory information system (LIS).
   1. Receive specimens submitted to the Immunology/Immunohematology laboratory. Determination if specimens have been collected, stored and transported to the laboratory appropriately. Processing specimens according to the procedures of the clinical site.
   2. Criteria and clinical site's procedure for sample rejection regarding:
      a. Blood bank specimens
      b. Component processing
      c. Serology specimens
   3. Centrifuge patient samples
   4. Testing workflow (what tests are performed on what analyzer).
   5. Tests requiring special specimen handling
   6. Pour off, when applicable, into sample cups appropriate for each test/analyzer.
   7. Dilutions of samples, when appropriate, with accurate results.
   8. Use of the LIS including: pending work lists, generating work lists, entering and verifying results, accessing patient result inquiry and maintaining patient confidentiality.
D. Operation of automated or semi-automated instrumentation.
1. Instrumentation used in the laboratory and the principles of operation.
   a. Advantages of using the specific instrument.
   b. Disadvantages of using the specific instrument.
2. Relating normal values to the appropriate test.
3. Checking reagent inventories and loading reagents when necessary.
4. Performing daily startup according to clinical sites protocol.
5. Analyzing quality control products.
   a. Frequency of analyzing QC material.
   b. Identifying the correct QC material to be run per test.
   c. System function checks related to quality assurance of serology and blood banking.
6. Recording and documenting the quality control results per clinical site protocol.
7. Analyzing patient samples.
8. Recognizing abnormal results and troubleshooting accordingly.
   a. Identifying the characteristics required in establishing critical values.
   b. Clinical sites protocol for reporting a critical value.
9. Evaluating and performing acceptable troubleshooting activities relative to quality control or patient results.
10. Performing daily shutdown according to clinical sites protocol.
11. Performing routine instrument maintenance.
E. Test methods and principles
1. Documenting daily the procedures performed, including observations.
2. Obtaining signature from supervising technologist verifying work performed, principles covered and skills competency. ious mononucleosis testing
3. Systemic Lupus Erythematosus testing
4. Antinuclear antibody testing.
5. Rheumatorind factor testing.
6. Syphilis testing.

F. Performing and interpreting all blood bank (immunohematology) procedures with 100% accuracy.
Confirming results with supervising Clinical Laboratory Scientist (CLS).
1. Determine the ABO and Rh type of any specimen, including forward, reverse and Du testing and recognizing discrepancies in typing results.
2. Performing cord blood testing and evaluating cord bloods with positive direct antigloblin tests.
3. Selecting blood for transfusions and performing major crossmatch procedures for persons with negative antibody screening. Determining which units are suitable for transfusion.
4. Identifying unexpected red blood cell antibodies.
5. Confirming the ABO and Rh type of donor units received in Transfusion service.
6. Performing Rhogam workups and the criteria for appropriate use of antenatal and postpartum Rhogam.
G. Performing procedures relating to blood and blood components following the guidelines of the clinical site.
1. Correctly issuing blood and blood components.
2. Properly selecting, preparing, storing, outdating, using and testing for compatibility for the following blood components.
   a. Fresh frozen plasma
   b. Platelets
   c. Washed red blood cells (RBC's)
d. Frozen RBC's  
e. Packed cells  
f. Cryoprecipitate  
g. Autologous/directed transfusion.  

3. Selecting blood for transfusion and performing the major crossmatch procedure for persons with positive antibody screening.  
4. Considerations involved when switching the ABO and/or Rh type of blood transfused to a patient.  

H. Observing and discussing with the supervising CLS, a transfusion reaction workup at the clinical sites  
1. Patient's symptoms  
2. Causes  
3. Recording laboratory findings.  

I. Performing and interpreting all serology (immunology) assays run in the department with results acceptable to the supervising CLS. These include, but are not limited to:  
1. Pregnancy testing  
2. Infect  

Methods of Instruction:  
Lab:  

Methods of Evaluation:  
Exams/Tests/Quizzes  
Skill Demonstrations  

Written assignments  

Typical Assignments:  
Reading:  

Writing, Problem Solving or Performance:  
Perform work as assigned by the supervising Clinical Laboratory Scientist. Discuss methodologies, theories, and interpretation of results with the supervising CLS. Analyze progress, answer questions, address concerns and review daily laboratory worksheets during weekly meeting the the MLT Coordinator.  

Other:  

Required Materials Examples:  
Book 1  
Author: Mahon, Connie R. & Diane Tice  
Publication Date: 2006  
Edition: 1st  
Title: Clinical Laboratory Immunology  
Publisher: Prentice Hall
**Book 2**

**Author:** Turgeon, Mary Louise  
**Title:** Immunology and Serology in Laboratory Medicing  
**Publication Date:** 2008  
**Edition:** 4th  
**Publisher:** Mosby

**Course Preparation:**

Prerequisite(s):  
MLT 118  
MLT 118L

Co-Requisite(s):  
None

Recommended:  
None

**Document Content Review**

**Target Course Skills**

**Condition on Enrollment**

Established

**Faculty**

Sue Albert Donna Berardo

**Basic Content Review**

In MLT 118 Clinical Immunology/Immunohematology Lecture the students learn the immunological principles and application of methods and site application. They learn blood banking principles. They learn such things as antibody identification. In MLT 130 they students apply this information in an actual blood bank laboratory. They will perform the procedures related to blood and blood components and they will perform and interpret all serology (immunology) assays run in the department.

**Condition on Enrollment**

Established

**Faculty**

Sue Albert Donna Berardo

**Basic Content Review**

To begin MLT 130 Clinical Immunology/Immunohematology Practicum the student must have a basic understanding of Immunology/Immunohematology including information on antigens, antibodies, blood groups, and blood components. They need a basic familiarity with the procedures. They get the basic hands on experience in MLT 118L, Clinical Immunology/Immunohematology Lab.