South Central College

# MDLT 2827 Clinical: Chemistry & Immunology

## Course Outcome Summary

### Course Information

**Description** During the clinical chemistry and immunology experience, the student is assigned to an affiliated hospital/clinic laboratory for the purpose of acquiring practical experience in a laboratory setting while under direct supervision. The experience allows the student to apply knowledge learned in the didactic phase of their training with practical hands-on experience for preparation of employment in a clinical laboratory. Students practice basic laboratory procedures/techniques, and phlebotomy. (Prerequisite: MDLT 1825, MDLT 1835, and MDLT 2807)

**Total Credits** 2

**Total Hours** 96

### Types of Instruction

| Instruction Type | Credits/Hours |
|---|---|
| Internship | 2/96 |

### Pre/Corequisites

MDLT 1825, MDLT 1835, and MDLT 2807

### Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

### Course Competencies

**1. Perform selected laboratory methods/procedures correctly, efficiently, and accurately by recognizing the importance of established procedures, quality control, and intra-laboratory communication according to the clinical facility's established protocol.**

**Learning Objectives**

Discuss existing clinical applications for common analytical methods/procedures.
Explain the general principles of common analytical methods/procedures.
Discuss the limitations of common analytical methods/procedures.

Interpret and report patient outcomes using clinical chemistry testing methods/procedures.

**2. Differentiate normal versus abnormal test results.**

**Learning Objectives**

Given laboratory data, evaluate clinical significance of test results.
Cite normal, abnormal, and critical reference intervals for common laboratory methods/procedures.
Correlate test results with clinical disease states.

**3. Summarize the importance of Total Quality Management (TQM).**

**Learning Objectives**

Define the following terms: quality assurance, quality control, accuracy, precision, reference interval, random error, systemic error, dispersion, delta check, trend, shift, and confidence intervals.
Evaluate laboratory data using the multi-rule system for quality control.
Describe the pre-analytical, analytical, and post-analytical phases of quality assurance.
Discuss proficiency-testing programs in the clinical laboratory.
Describe the basic terms and state the formulas for the standard deviation and coefficient of variation.
Describe the use of Levey-Jennings quality control charts.
Apply appropriate corrective measurements to quality control errors.

**4. Demonstrate respect for, and compliance with laboratory safety protocol.**

**Learning Objectives**

Explain the importance of laboratory safety.
Choose appropriate personal protective equipment when working in the laboratory.
List and describe the basic aspects of infection control policies and practices.
Identify hazards related to handling chemicals, and biologic specimens.
Select the correct means for disposal of waste generated in the clinical laboratory.
Outline the steps required in documentation of an accident in the workplace.

**5. Explain the importance of proper patient identification.**

**Learning Objectives**

Describe the importance of treating patients while using excellent interpersonal skills as well as the collection of a blood specimen.
Name the major type of error in specimen collection.

**6. Perform the daily functional checks and maintenance on clinical facility's equipment and analyzers.**

**Learning Objectives**

Discuss importance of routinely performing maintenance, calibration, and troubleshooting of laboratory analyzers and equipment.
Demonstrate proper procedures in maintenance, calibration, operation, and troubleshooting of laboratory analyzers and equipment.

**7. Demonstrate ability to work as a team member by following procedures and instructions, communicating problems that may arise, and suggesting solutions for those problems.**

**Learning Objectives**

List personal qualities that characterize a clinical laboratory professional.
Explain how a clinical laboratory professional demonstrates personal qualities.
Explain importance of good communication between clinical laboratory professionals and other medical professionals.
Demonstrate acceptable attitudes toward laboratory work, laboratory personnel, and laboratory safety.
Discuss importance of working as a team member to ensure quality patient care.

**8. Describe the basic principles of instructor-selected clinical chemistry testing methods/techniques used in the clinical chemistry laboratory.**

**Learning Objectives**

Discuss existing clinical applications of clinical chemistry testing methods/techniques determined by the instructor.
Compare and contrast clinical chemistry testing methods/techniques determined by the instructor.

**9. Discuss the types of clinical chemistry testing methods/techniques used in the diagnosis of**

**clinical diseases/disorders.**

**Learning Objectives**

Compare and contrast clinical chemistry testing methods/techniques determined by the clinical internship instructor.
Discuss existing clinical applications of clinical chemistry testing methods/techniques determined by the instructor.

**10. Review the basic principles of immunology and apply these principles to the performance and interpretation of laboratory tests in a clinical setting.**

**Learning Objectives**

Define the terms immunology, antigen, antibody, specificity, and avidity.
Describe the first line of defense, natural immunity, and adaptive immunity.
Describe the characteristics of a primary and secondary response.
Explain the process of phagocytosis.
Describe the body's defense mechanisms against infectious diseases and immunologic disorders.
Name and describe the various types of nonspecific mediators of the immune system (e.g., cytokines, interleukins, tumor necrosis factor, chemokines, etc.).
Name and describe the characteristics of each of the five immunoglobulin classes.

## SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.