

**SOUTHEAST COMMUNITY COLLEGE
HEALTH SCIENCES DIVISION
MEDICAL LABORATORY TECHNOLOGY
Revision Date: 04/2026**

I. CATALOG DESCRIPTION

Course Number: MEDT 2110
Course Title: Medical Laboratory Chemistry 1
Prerequisite(s): MEDT 1170, CHEM 1051, & CHEM 1052

Catalog Description: Study of theory and application of clinical chemistry normal and disease states, and normal and abnormal constituents of urine. Study of instrumentation methods used in clinical and reference laboratories. Skills and laboratory techniques corresponding to theoretical information presented in lecture. Laboratory is concurrent with lecture.

Credit Hours: 5
Class Hours: 45
Lab Hours: 90
Total Contact Hours: 135

Notes: Combining old MEDT2552, MEDT2125 and MEDT2512

II. COURSE OBJECTIVES *Course will:*

1. Introduce the student to the fields of clinical chemistry and urinalysis.
2. Communicate concepts of analytical chemistry to meet the needs of the Medical Laboratory Technology program students.
3. Introduce the theory and practical application of the modern techniques of chemical analysis, molecular and atomic spectroscopy, chromatography, mass spectrometry, electrochemistry, and other techniques used in clinical chemistry.
4. Familiarize the student with the physical, chemical, and microscopic examination of urine specimens.
5. Familiarize the student with the theory and clinical application of medical laboratory chemistry tests.
6. Provide practice performing chemistry analyses and urinalysis.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

A. STUDENT LEARNING OUTCOMES *Student will be able to:*

1. Describe the fields of clinical chemistry and urinalysis.
2. Define the terminology of clinical chemistry and urinalysis.
3. Discuss the principles of quality assurance and quality control.
4. Practice laboratory safety and develop skill in using equipment in the clinical chemistry and urinalysis laboratory.
5. Demonstrate knowledge of the general concept of analytical chemistry.
6. Describe the principles of instrumentation in clinical chemistry and urinalysis.
7. Demonstrate the nature of light and how light interacts with matter.
8. Demonstrate knowledge of spectrophotometry, including instrument design, Beer's Law, and experimental variables.

9. Demonstrate knowledge of fluorometry, atomic spectroscopic techniques, chromatography, mass spectrometry, electrochemistry, and other techniques used in the clinical laboratory, including instrument components, design, and application.
10. Utilize laboratory instruments and glassware appropriately.
11. Identify and follow prescribed safety procedures and precautions in the student laboratory and clinical setting.
12. Discuss the principles of the chemical reactions for the analysis of specific body constituents.
13. Explain the physiology and metabolism of the kidneys and renal function, carbohydrate metabolism, amino acids and proteins, lipids and lipoproteins, clinically significant enzymes.
14. Describe the clinical tests used to assess renal function, carbohydrate metabolism, amino acids and proteins, lipids and lipoproteins, clinically significant enzymes, including the principles and procedures.
15. Identify the reference ranges for clinical chemistry and urinalysis parameters discussed in lecture and performed in student laboratory.
16. Relate the clinical significance of clinical tests used in the assessment of renal function, carbohydrate metabolism, amino acids and proteins, lipids and lipoproteins, clinically significant enzymes.
17. Perform clinical chemistry and urinalysis procedures.
18. Demonstrate cooperation when working with others.

B. GENERAL EDUCATION LEARNING OUTCOMES

1. GELO #3: Critical Thinking & Problem Solving

1. Collect, identify, interpret and analyze data.
4. Evaluate the validity of arguments, alternatives, data, outcomes, and/or impacts of actions.

IV. CONTENT/TOPICAL OUTLINE

1. **URINALYSIS—MACROSCOPIC & MICROSCOPIC**
2. **INSTRUMENTATION**
3. **QUALITY ASSURANCE AND QUALITY CONTROL**
4. **KIDNEY AND RENAL FUNCTION**
5. **CARBOHYDRATES**
6. **AMINO ACIDS AND PROTEINS**
7. **LIPIDS AND LIPOPROTEINS**
8. **ENZYMES**

V. INSTRUCTIONAL MATERIALS

A. Required Text(s):

Brunzel, Nancy A. *Fundamentals of Urine and Body Fluid Analysis* (latest ed. found in CID)
 Bishop, M. *Clinical Chemistry Principles, Techniques, and Correlation* (latest ed. found in CID)

B. Other Required Resources:

Packet of Handouts

VI. METHODS OF PRESENTATION/INSTRUCTION

Methods of presentation/instruction include a combination of the following:

1. In-person and recorded lectures and videos
2. In-person and recorded laboratory demonstrations and videos

3. Hands-on activities
4. Role play
5. Online resources
6. Guest presentations
7. Case studies

VII. METHODS OF EVALUATION

- A. Methods of evaluation typically include a combination of assignments, quizzes, exams, projects, laboratory competencies, etc. For grading expectations please see the course information document.

SCC STANDARD GRADING SCALE POLICY:

A+	95-100	C+	75-79
A	90-94	C	70-74
B+	85-89	D+	65-69
B	80-84	D	60-64
		F	Below 60

VIII. SPECIFIC COURSE REQUIREMENTS

A. ATTENDANCE

Attendance is crucial to the success of this course. The attendance policy can be found in the MLT Student Handbook.

B. OTHER

Please see the Course Information Document for course policies related to grading, expectations, assignments, assessment, and participation.