SOUTHEAST COMMUNITY COLLEGE
MEDICAL LABORATORY CHEMISTRY 1
HEALTH SCIENCES DIVISION
Revision Date: 9/2019
Syllabus Statements

I. CATALOG DESCRIPTION

Course Number:	**MEDT 2110**
Course Title	**Medical Laboratory Chemistry 1**
Prerequisite(s):	**CHEM 1090 and MEDT 1170**
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:	5.0
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 pronciples of the chemical reactions for the analysis of specific body costituents.
13. Explain the physiology and metabolism of the kidenys and renal function, carbohydrate metabolism, amino acids and proteins, lipids and lipoproteins, clinically significant enzymes, and liver and bilirubin metabolism
14. Describe the clinical tests used to assess renal function, carbohydrate metabolism, aminoa acids and proteins, lipids and lipoproteins, clinically significant enzymes, and liver function, 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, and bilirubin.
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

Outcomes:

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. Scope of Clinical Chemistry
2. Instrumentation
3. Quality Assurance and Quality Control
4. Proficiency Testing
5. Laboratory Computer Systems
6. Kidney and Renal Function
7. Carbohydrates
8. Amino Acids and Proteins
9. Lipids and Lipoproteins
10. Enzymes

11. Liver Function

V. INSTRUCTIONAL MATERIALS

A. Required Text(s):

Brunzel, Nancy A. *Fundamentals of Urine and Body Fluid Analysis* (Most Current Edition)

Sunheimer, Robert L., and Graves, Linda. *Clinical Laboratory Chemistry* (Most Current Edition)

B. Other Required Resources:

Packet of Handouts

VI. METHODS OF PRESENTATION/INSTRUCTION

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

1. Lecture
2. Images
3. Demonstrations
4. Audio-visual materials
5. Lecture and laboratory exercises

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination 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. GRADING

Lecture and laboratory must be passed with a 75% or higher. If either the Lecture Grade or Lab Grade is below 75% (C+), the student will receive the lower grade as the Grade for the course.

B. ATTENDANCE

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

Attendance for lecture is expected. Missing lecture will result in valuable information being missed and may have a negative effect on a student's grade in the course.

Attendance for laboratory sessions is required. The MLT attendance policy will be followed and applied in this course. Failure to attend laboratory sessions will have a negative effect on a student's grade in the course.

C. OTHER

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