

Virginia Western Community College

MDL 261

Clinical Chemistry and Instrumentation I

Prerequisites

CHM 101 or equivalent

VWCC Course Description

Introduces methods of performing biochemical analysis of clinical specimens. Teaches instrumentation involved in a clinical chemistry laboratory, quality control, and the ability to recognize technical problems.

Semester Credits: 4

Lecture Hours: 3

Laboratory Hours: 3

Required Materials

Textbook

Clinical Laboratory Chemistry, 2nd edition. July 29, 2020. Robert Sunheimer. ISBN-13: 9780135678947

Other Required Materials:

Clinical Chemistry Laboratory Procedures provided by VWCC

VWCC COURSE OUTCOMES

- Describe the various types and principles of the automated chemistry analyzers.
- Correlate the results of chemistry lab tests to specific disease conditions.
- Describe how various enzymes function mechanistically, and which enzymes are associated with various organs in the human body.
- Describe the role of various endogenous chemicals in the human body, such as glucose, urea, amino acids, proteins, and electrolytes.
- Correlate disturbances in the normal body concentration of electrolytes and endogenous biochemicals (upset of homeostasis) with the onset of pathological states.
- Recognize abnormal concentration values for the above substances in a blood

sample.

- Perform manual and automated test methodologies for select analytes in a blood sample and recognizing analytical errors in the generation of results.
- Distinguish between normal human physiology and pathological states in the major organ systems.
- Identify methods to produce reagent water and items monitored during the water purification process.
- Describe safety practices and organizations, roles, and functions of the clinical chemistry laboratory.
- Recognize biological, chemical, and physical hazards and apply methods to ensure a safe work environment.
- Interpret laboratory statistics, quality control, descriptive statistics, and inferential statistics.

VWCC TOPICAL DESCRIPTIONS

- Clinical Chemistry Laboratory Basics
- Safety in the Clinical Chemistry Laboratory
- Laboratory Statistics, Method Development and Quality Control
- Instrumentation, Laboratory Automation and Informatics
- Carbohydrates
- Lipids and Lipoproteins
- Amino Acids and Proteins
- Enzymes
- Non-protein Nitrogen and Renal Function
- Body Water and Electrolyte Homeostasis
- Blood Gases, pH, and Acid-Base Balance

[TITLE IX STATEMENT](#)

[ADA STATEMENT](#)