

**NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY  
MDL 261 - CLINICAL CHEMISTRY AND INSTRUMENTATION (4 CR.)**

**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. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**General Course Purpose**

The purpose of this course is to prepare students with the knowledge of routine procedures and instrumentation within a clinical chemistry laboratory. It is designed to produce entry level competence needed to perform at the level of a medical laboratory technician in a sophisticated clinical chemistry laboratory.

**Course Prerequisites/Co-requisites**

Students enrolling in this course are expected to be familiar with general theoretical chemistry and the principles of basic human anatomy and physiology. They should have completed MDL 101 and MDL 196 with a grade of "C" or better. Students should be enrolled in the first year of the Medical Laboratory Technology AAS degree program or program approval.

**Course Objectives**

Upon completing the course, the student will be able to:

- Summarize the process of quality assurance and quality control.
- Describe how precision and accuracy of methods are determined within clinical chemistry.
- Discuss the use of spectrophotometry in the clinical chemistry laboratory.
- Contrast four ligand (immunoassay) methods.
- Discuss electrochemical methods of analysis in clinical chemistry, including electrolyte results and acid-base balance
- List the clinically significant carbohydrates and discuss diabetes management
- Discuss the analytes measured in the diagnosis and management of kidney disease
- Correlate increases in enzyme activity, proteins, and bilirubin with disease processes in liver, pancreas, muscle, and other tissues and organs.
- Define cardiac markers and relate to the diagnosis of myocardial infarction (MI).
- Discuss lipid profiles and how they are utilized in minimizing cardiovascular risk.

**Major Topics to be Included**

- Concepts of spectrophotometric analysis
- Statistics and quality control/assessment in clinical chemistry
- Proteins/Enzymes
- Carbohydrates
- Electrolytes/Blood gases
- NPN and Renal Function
- Immunochemical (Ligand) assays
- Lipids/Lipid profiles