

Common Course Outline
CHEM 225
Medical Laboratory Techniques V:
Diagnostic Tests in Clinical Chemistry and Urinalysis
2 Credits

The Community College of Baltimore County

Description

Medical Laboratory Techniques V

Diagnostic Tests in Clinical Chemistry and Urinalysis

Provides preparation for students for internships (MLTC 240, 241) in Clinical Chemical Labs; emphasizes development of lab skills using manual procedures and understanding of basis for chemical analysis.

2 credits - 5 laboratory hours a week.

Prerequisites: CHEM 105, CHEM 146, CHEM 147, MATH 135, MLTC 101, Hepatitis B vaccination; CHEM 223 must be taken concurrently. (Offered Fall, Friday only).

Overall Course Objectives

Upon completion of this course, students will be able to:

1. Demonstrate compliance with all applicable laboratory safety procedures as outlined in the Universal Precautions statement found in the MLT Program Policy & Procedure Booklet
2. Interpret quality assurance data and determine whether to accept or reject a given test run.
3. Plot and interpret standard curves, using the curves to determine patient results.
4. Perform routine volumetric measurements.
5. Calculate dilutions, molarity and normality problems, using the results to prepare laboratory reagents.
6. Describe any special handling that may be required in certain assays, either for patient specimens or reagents.
7. Reconstitute all reagents and control materials provided in test kits.
8. Develop proficiency at using common analytical instruments available in the student laboratory – identify components, explain functions of various components, perform routine maintenance and cleaning procedures.
9. Set-up, run controls and unknown patient specimens, and understand principles of operation of Chiron electrolyte analyzer.
10. Perform selected assays to support didactic material (CHEM 223) with a goal of developing acceptable proficiency in basic laboratory techniques such as pipetting, colorimetry, etc.

11. Explain the clinical significance of chemistry tests – list normal and abnormal results, reference ranges, and relate results to disease states.
12. Describe analytical principles used in various automated instruments seen on a tour of a clinical chemistry laboratory at a local hospital.
13. Perform and explain chemical analysis of urine, relating results to disease states.
14. Describe normal and abnormal physical characteristics of urine, such as color, turbidity, and specific gravity.
15. Identify commonly encountered urine crystals, cells, and casts and relate to clinical condition of patient.
16. Demonstrate internalization of laboratory safety procedures:
 - always wear appropriate personal protective equipment
 - dispose properly of sharps, contaminated glassware, gloves, etc.
 - behave correctly in a laboratory setting, e.g. no horseplay, shoving, etc.
17. By mastering the content of each MLT course, begin to appreciate the role a laboratory technician plays in the diagnosis and treatment of a disease.
18. Demonstrate problem-solving skills in laboratory exercises and case history problems.
19. Demonstrate inter-personal skills by cooperating with other members of a student laboratory group.
20. Demonstrate the ability to read a procedure, plan a course of action, and follow through to a conclusion.

Major Topics

Pipette Calibration

Biuret Protein

BCG Albumin

LDH & Amylase

Chiron-electrolytes

Urinalysis – chemical testing

Urinalysis – microscopic testing

Bilirubin

Glucose & Glucometer

Bun & Creatinine

Cholesterol

Calcium & Phosphorus

Competency Testing

Course Requirements

Students are expected to submit weekly lab reports and participate in weekly quizzes. There is also a lab math homework project. Students will also participate in competency testing.

There is one written examination, a comprehensive final examination.

Other Course Information

Prior to beginning any lab exercises, students are required to present proof of current health insurance and hepatitis B vaccination certificate or waiver.