Alexandria Technical and Community College

MELT 2615: Diagnostic Chemistry

A. COURSE DESCRIPTION

Credits: 5
Lecture Hours/Week: 3
Lab Hours/Week: 2
OJT Hours/Week: *.*

Prerequisites:
This course requires all three of these prerequisite categories
1. One of these two groups
   1. Both of these groups
      1. One of these two groups
         1. All of these three groups
            1. One of these two groups
               1. Both of these
                  CHEM 1406 - Fundamentals of Chemistry
                  BIOL 1416 - Essentials of Anatomy and Physiology
                  Or
                  2. CHEM 1406 - Fundamentals of Chemistry
                     And
                  2. BIOL 1417 - Human Anatomy & Physiology I
                     And
                  3. BIOL 1419 - Human Anatomy and Physiology II
                  Or
                  2. CHEM 1405 - Fundamentals of Chemistry
                     And
                  2. BIOL 1416 - Essentials of Anatomy and Physiology
                     Or
                  2. CHEM 1405 - Fundamentals of Chemistry
                     And
                  2. BIOL 1417 - Human Anatomy & Physiology I
                     And
                  3. BIOL 1419 - Human Anatomy and Physiology II

Corequisites: None
MnTC Goals: None

Diagnostic Chemistry includes theory and analysis of chemical constituents of the blood. The course includes detailed theory, testing methodologies, reference ranges, clinical significance, and laboratory analysis of carbohydrates, proteins, lipids, liver function tests, non-protein nitrogen, electrolytes, minerals and acid/base. Enzyme tests used for the diagnosis of cardiac, liver, bone and analytical methods are studied in depth. Additional units of study include therapeutic drug monitoring (TDM), toxicology, endocrinology, and tumor markers. This course will expose the medical laboratory technician (MLT) student to various methods of analysis used in clinical chemistry laboratories to assist in diagnosing, monitoring treatment, and preventing disease.

B. COURSE EFFECTIVE DATES: 08/25/2014 - Present
C. OUTLINE OF MAJOR CONTENT AREAS
   1. Describe carbohydrates and lipid clinical significance.
   2. Perform diagnostic function tests manually and/or with automation.
   3. Discuss cardiac enzymes and liver function tests.
   4. Compare analytical methods and instrumentation.
   5. Differentiate nonprotein nitrogen tests and proteins.
   6. Discuss electrolytes and minerals.
   7. Calculate unit conversions, dilutions, ratios, percent and stock problems.
   8. Determine blood gas disorder.
  10. Present tumor markers, toxicology, endocrinology and TDM.

D. LEARNING OUTCOMES (General)
   1. The learner will demonstrate knowledge of carbohydrates, lipids, proteins and NPN.
   2. The learner will demonstrate knowledge of enzymes and liver function.
   3. The learner will demonstrate knowledge of analytical methods and instrumentation.
   4. The learner will demonstrate knowledge of electrolytes and acid base.
   5. The learner will demonstrate knowledge of therapeutic drug monitoring, toxicology, endocrinology, and tumor markers.
   6. The learner will demonstrate knowledge of quality assurance and quality control.
   7. The learner will calculate lab math problems.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted