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. This course is a prerequisite for MELT2742. Prerequisite CHEM1405 and BIOL1416 or BIOL1417 and BIOL1419. Corequisite: MELT1602.

B. COURSE EFFECTIVE DATES: 08/25/2014 - Present
C. OUTLINE OF MAJOR CONTENT AREAS
   1. Describe carbohydrates.
   2. Discuss lipid clinical significance.
   3. Distinguish types of proteins.
   4. Perform enzymatic tests.
   5. Perform cardiac function tests.
   6. Perform liver function tests.
   7. Perform pancreatic function tests.
   8. Compare analytical methods and instrumentation.
   9. Discuss nonprotein nitrogen tests.
  10. Discuss electrolytes.
  11. Calculate electrolyte unit conversions.
  12. Discuss minerals.
  13. Calculate dilutions, ratios, percent and stock problems.
  15. Present tumor markers, toxicology, endocrinology and TDM.

D. LEARNING OUTCOMES (General)
   1. The learner will demonstrate knowledge of carbohydrates, lipids and proteins.
   2. The learner will demonstrate knowledge of enzymes, and liver function.
   3. The learner will demonstrate knowledge of analytical instrumentation, and laboratory automation.
   4. The learner will demonstrate knowledge of nonprotein nitrogen, electrolytes, and minerals.
   5. The learner will demonstrate knowledge of acid/base, therapeutic drug monitoring, toxicology, endocrinology, and tumor markers.

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

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted