A. Course Description

Credits: 2

Lab Hours/ Weeks: Corequisites: CHEM 325 - Biochemistry I: Biomolecule Structure and Function

Lecture Hours/ Week :

MnTC Goals: None

This lecture/laboratory course exposes students to modern techniques in biochemistry. The course is part of a year-long biochemistry series that broadly cover the study of chemical processes in living organisms. Biochemical techniques covered include bench chemistry techniques, chromatography techniques, polyacrylamide gel electrophoresis, protein purification and characterization, protein assay techniques, and spectrophotometry. Students also carry out semester-end research project in which they apply the techniques they learned in the first part of the semester.

B. Course Effective Dates: 01/12/2015 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Understand the differences between anabolic and catabolic processes in metabolism
2. Known photosynthesis reaction
3. Know the genetic code and the concepts of translation and transcription
4. Know how recombinant DNA works
5. Know the differences between RNA and DNA
6. Understand the mechanism of DNA repair and its relationship to diseases
7. Know the structure of viral particles and their mechanism of infection
8. Understand the concept of gene expression and genomic reorganization
9. Use knowledge from organic chemistry reaction mechanism to follow metabolic pathways
10. Be able to describe how anabolic and catabolic processes are coupled to energetics from ATP hydrolysis
11. Understand redox and electron transfer reactions in biological systems
12. Understand that reaction coordinate diagrams are useful for thermodynamics of coupling anabolic and catabolic processes in metabolism
13. Know and understand the Calvin cycle
14. Flow the fate of precursors and radioactive labels in metabolic reactions
15. Relate glycogen and glycolysis metabolism to diseases and their treatment
16. Identify enzymes involved in metabolic pathways

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

G. Special Information

Note: First day attendance required except by instructor permission.