A. COURSE DESCRIPTION

Credits: 4
Lecture Hours/Week: 3
Lab Hours/Week: 2
OJT Hours/Week: *.*
Prerequisites: None
Corequisites: None

MnTC Goals: Goal 03 - Natural Science

An introduction to the structure and function of living systems, with an emphasis on basic mechanisms and concepts in biochemistry and in cellular and molecular biology. Intended for biology majors and minors, preprofessional students, and open to any student wishing to fulfill their Liberal Education requirement. Lecture and laboratory. BIOL 1211 and BIOL 1212 must be taken in sequence. Liberal Education Goal Area 3 (LC).

B. COURSE EFFECTIVE DATES: 09/03/2002 - Present
C. OUTLINE OF MAJOR CONTENT AREAS
   1. Introduction - What is life?
   2. What is science?
   3. Atoms, periodic table, chemical bonds
   4. Water
   5. Biological molecules
   6. Proteins
   7. Nucleic acids
   8. Lipids and carbohydrates
   9. Origins of life
  10. Cells, prokaryotic cells
  11. Enkaryotic cells
  12. Cell membranes
  13. Energy
  14. Enzymes and metabolism
  15. Respiration
  16. Photosynthesis
  17. Cell division and mitosis
  18. Meiosis and sexual reproduction
  19. Mendelian genetics
  20. Human genetics
  21. DNA structure and replication
  22. DNA and genes
  23. The genetic code, information and content of DNA
  24. Transcription and translation
  25. Gene expression
  26. Gene technology

D. LEARNING OUTCOMES (General)
   1. acquire an understanding of the chemistry and biomolecules important for living organisms.
   2. acquire a basic understanding of prokaryotic and eukaryotic cellular organelles.
   3. understand the utilization of energy via respiration.
   4. understand the transformation of light energy into reduced carbon compounds.
   5. become familiar with the relationship between DNA, chromosomal sorting, and inheritance of traits.
   6. understand how information carried by DNA is used by a cell and how alterations within the sequence of DNA can change the characteristic of organisms.
E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted