A. Course Description

Credits: 5

Prerequisites: 
- BIOL 111 General Biology I AND
- CHEM 111 General Chemistry I AND
- CHEM 112 General Chemistry II AND
- CHEM 231 Organic Chemistry I AND
- MATH 115 College Algebra

OR

- BIOL 111 General Biology I AND
- CHEM 111 General Chemistry I AND
- CHEM 231 Organic Chemistry I AND
- MATH 120 Precalculus

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: None

This course covers the structure of biologically important compounds (proteins, carbohydrates, lipids, and enzymes) and their transformations during metabolism. Topics include: enzyme kinematics, chemical reactions (acid/base, reduction/oxidation, hydrolysis, etc.), protein synthesis and regulation, use and interpretation of biochemical information, and problem-solving in biochemistry. Lab includes biochemical methods and techniques and develops skills with laboratory instruments, data collection, and scientific writing. Intended for biology majors and chemistry minors.

B. Course Effective Dates: 08/18/2018 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Understand biochemical terms and concepts and solve biochemical problems that interpret biological phenomena or data at the upper division level.
2. Apply experience with laboratory methods, data analysis, and scientific writing skills biochemistry at the level necessary for success in senior undergraduate research.
3. Demonstrate quantitative reasoning skills and competency with algebra and statistics at a level appropriate for graduates of a bachelor’s degree program in biology.
4. Read and interpret primary scientific literature in biochemistry.
5. Recall, explain and apply the concepts, knowledge and vocabulary of biochemistry at the level necessary for success in graduate and professional study in this field.
6. Recognize and apply knowledge of chemical reactions in biochemistry and physiology, including acid/base reactions, reduction-oxidation reactions, hydrolysis, etc.
7. Understand and explain how illustrate how amino acids bond together and form larger macromolecules, the principles of protein synthesis and regulation, and be able to predict which biochemical reactions can or cannot take place and understand concepts of enzyme kinetics and catalysis and the effects of inhibitors on enzymatic reactions.
8. Understand and use the signatory language of biochemists and be able to recognize and use biochemical information in the form of procedures, tabulated data, and explanations.

E. Learning Outcomes (MN Transfer Curriculum)
This contains no goal areas.

G. Special Information

Note: First day attendance required except by instructor permission.