A. Course Description

Credits: 4

Prerequisites: MATH 115 College Algebra
OR
MATH 120 Precalculus

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: Goal 03 - Natural Science

The first semester of the comprehensive first year course in chemistry. Covers measurement, stoichiometry, solution chemistry, atomic structure, bonding, molecular structure, molecular visualization, and problem solving. Lab includes basic laboratory techniques, instrumentation, methodology, chemical analysis, and laboratory notebook procedures. The labs are also designed to engage students in critical thinking and concept building and are directly coordinated with the lecture part of the course. Intended for students who are pursuing, or considering, the biology or life sciences teaching major and/or chemistry minor, and qualified students seeking a general education science course with lab.

B. Course Effective Dates: 08/15/2017 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Conceptualize, model, and explain chemical processes qualitatively at the molecular level.
2. Demonstrate quantitative reasoning skills and competency with arithmetic, algebra, and statistics at a level appropriate for first semester science majors and graduates of bachelors degree programs.
3. Explain how matter and energy are related and how this relation impacts the physical states of matter and chemical reactions.
4. Illustrate how atoms bond together and form larger structures, name compounds, and predict which chemical reactions can and cannot take place.
5. Recall, describe and apply the concepts, knowledge and vocabulary of chemistry at the level necessary for success in a second semester algebra-based general chemistry course for biology majors.
6. Recognize frequently encountered chemical reactions in biochemistry and physiology, such as acid/base reactions, oxidation-reduction reactions, hydrolysis, etc.
7. Understand and apply knowledge of chemical laboratory equipment and safety, and use that knowledge in the proper conduct and interpretation of laboratory investigations.
8. Understand and use the signatory language of chemists and be able to recognize and use chemical information in the form of procedures, tabulated data, and explanations.

E. Learning Outcomes (MN Transfer Curriculum)

Goal 03 - Natural Science

1. 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.
2. Demonstrate understanding of scientific theories.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
G. Special Information

Note: First day attendance required except by instructor permission.