A. Course Description

Credits: 5

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: None

This course is first in a series for analytical chemistry. Student work will focus on the fundamental principles of volumetric and gravimetric methods for separation, identification and quantification of chemical substances. Students will learn proper statistical treatment of experimental data and error analysis as well as develop concepts of accuracy and precision. Techniques and concepts presented in this class are in high demand by a variety of industrial labs.

B. Course Effective Dates: 08/16/2013 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. To learn and master the basic skills needed to perform quantitative analytical measurements (mass and volume measurements, quantitative transfer, etc.)
2. To understand and apply a variety of chemical reactions (precipitation, acid-base, complexation, and oxidation-reduction) for the quantitative analysis of three or more certified unknowns.
3. To understand and apply at least one instrumental method of analysis (e.g., spectrophotometry) to one or more certified unknowns.
4. To introduce students to formal laboratory report writing.
5. To learn how to calculate the concentration of an analyte in an unknown sample (and the associated uncertainty, when applicable).
6. To learn how to handle the statistical treatment (mean, standard deviation, 95% confidence interval, etc.) of experimental data obtained via volumetric and instrumental methods of analysis.
7. To understand the difference between accuracy and precision of the results obtained.

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

G. Special Information

Note: First day attendance required except by instructor permission.