

Chem 212: Introduction to Quantitative Analysis

Course description: Introduction to quantitative analytical chemistry, data analysis, and chemical equilibrium and buffers. Application of analytical techniques for sampling, chemical separations and quantification. Laboratory focuses on quantitative measurements and their application to introductory analytical and physical chemistry experiments.

Course Goals
Develop the ability to apply the concepts of acidity and basicity to aqueous systems
Develop an understanding of a range of analytical or characterization methods
Develop an understanding and applications of a variety of analytical techniques
Develop the ability to apply the relationship between the magnitude of spectroscopic and spectrometric signals and sample concentrations
Develop an understanding of the concept and applications of separation methods
Develop an understanding of error analysis
Develop an understanding of the application and limitations of statistics in error analysis
Develop an understanding of the concepts of calibration, quantification and detection
Develop an understanding of sampling and its impact on data
Develop an understanding of the concept of interferences and controls in measurements
Develop the ability of appropriate sample preparation for the execution of chemical analysis
Develop the ability to manipulate chemicals quantitatively with analytical precision
Develop the ability to analyze an unknown sample for chemical information
Develop the ability to apply statistics to experimental data
Develop an understanding of the principles behind physical measurements
Develop the ability to execute physical measurements in chemistry
Develop an understanding of the relationship between experimental data, correlations and fits to theoretical equations
Program Goals
Develop competence in problem solving.

Develop the ability to design, conduct and observe chemical experiments and to record and critically analyze data from chemical experiments.

Develop the ability to work competently, independently and safely in a laboratory environment.

Develop the ability to apply error analysis and determine significant figures.

Develop the ability to apply mathematics to chemistry.

Develop the ability to disseminate scientific information orally and in writing.

Develop an understanding of the impact and relevance of chemistry in society.

Develop an understanding of the chemistry profession in the workforce.

Develop the ability to apply academic and scientific integrity to scholarly and professional endeavors.