Date: November 4, 2011
Department: FCH
Course Number: 380
Course Title: Analytical Chemistry I
Name of Requestor: Art Stipanovic

Description of the Change: Comparing the course description attached and the Registrar’s online course schedule, some inconsistencies exist regarding the pre-requisites or co-requisites for this course. At this point, I would recommend that the only requirement for FCH 380 be that students have successfully completed one year of General Chemistry (I, II) plus the associated lab courses.

For OIGS Only

☑ Approve

☐ Deny (Explanation if denied):

S. Scott Shannon  
Date 11/6/11
DETAILED COURSE DESCRIPTION

COURSE: FCH 380 ANALYTICAL CHEMISTRY I: GRAMIMETRIC, TITRIMETRIC AND POTENTIOMETRIC ANALYSIS
3 Credit hours (2 lecture, 1 laboratory) - Fall Semester

PREREQUISITES:
Change to: General Chemistry I and II and the associated lab courses.
Delete: Two years of undergraduate chemistry and FCH 360 (or equivalent) taken concurrently; or permission of instructor.

OBJECTIVES:
To develop an understanding of equilibrium concepts in precipitation, complexation, acid-base, oxidation-reduction, and chromatographic separation processes.
To explain the theory and practice associated with applying these concepts to gravimetric, titrimetric, potentiometric, and spectrophotometric analyses.
To teach the practical chemistry laboratory skills involved in standardization, quantitative volumetric transfer, and the determination of accuracy and precision.

SCOPE:
Two hours per week of classroom lecture will begin with a review of fundamentals and a treatment of data representation and manipulation, to establish a statistical basis for accuracy, precision, etc. Computer-based techniques for off-line data treatment will be employed for classroom and laboratory exercises. These will be followed by lectures relating to gravimetry, titrimetry, acid-base equilibria and titrations, complexation equilibria and tiritrations, and oxidation-reduction equilibria and titrations. Lecture material will conclude with precipitation equilibria, potentiometry, and an introduction to separations and liquid/solid chromatography. Laboratory exercises will be conducted concurrently with lecture topics. Where possible, standards and analyte preparations will be preserved for further use in the Analytical Chemistry II laboratory.

MATERIALS AND METHODS:
The course will utilize a text such as that of L. Harris (1988) -- "Analytical Chemistry/Principles and Techniques," Prentice Hall, which includes problem sets and laboratory experiments. Course performance will be assessed from three one-hour examinations, graded homework problems, and laboratory experiment write-ups. A weekly pre-lab briefing will detail the expected laboratory procedures and emphasize any particular safety concerns for the laboratory sessions.

RELATIONSHIP TO OTHER COURSES:
This fundamental quantitative analysis course is a normal requirement for other senior-level Chemistry laboratory courses. It will serve as a prerequisite for Analytical Chemistry II. The Analytical I & II sequence will use (where feasible) common analytes--Analytical Chemistry I will involve preparation of standards and sample materials followed by manual analysis; Analytical Chemistry II will utilize the same analyte solutions, but employ instrumental techniques for analysis.
INSTITUTIONAL RESOURCE REQUIREMENTS:
Classroom and laboratory space of up to 40 students will be required along with appropriate Teaching Assistant support. Software programs for data manipulation and interpretation will be installed on the Macintosh and IBM clusters in Baker Lab and will therefore necessitate (random time) student access to these facilities for conduct of lecture and laboratory exercises.

CATALOG DESCRIPTION:
FCH 380 ANALYTICAL CHEMISTRY I: GRAVIMETRIC, TITRIMETRIC, AND POTENTIOMETRIC ANALYSIS
3 CREDIT HOURS
Equilibrium concepts and practical implementations of precipitation, complexation, acid-base, and oxidation-reduction processes in quantitative chemical analysis. 3 credit hours; Fall semester.

Change to: Prerequisites: General Chemistry I and II an associated lab courses
Old Prerequisites to be deleted: Two years of undergraduate chemistry and FCH 360 (or equivalent) taken concurrently; or permission of instructor.

COURSE HISTORY:
Approved by Faculty Action 11/20/75. Retitled and revised by Faculty Action 4/18/91.