CHEM 4100: Directed Applied Research

1-3 Credit Hours

Prerequisite: Junior level status; consent of the instructor and chair.

Applied research project directed by a faculty member.

CHEM 4110: Advanced Topics in Inorganic Chemistry

3 Credit Hours

Prerequisite: CHEM 3100, CHEM 3602

Survey of modern inorganic chemistry and current theories concerning atomic structure, bonding, coordination chemistry, spectroscopy including a discussion of symmetry and group theory as they apply to the characterization of inorganic compounds, ligant field theory and other topics.

CHEM 4120L: Research Methods Laboratory

2 Credit Hours

Prerequisite: CHEM 2800 and CHEM 3362

This course will teach students advanced laboratory skills through work on a designed research project. Students will learn how to search the scientific literature, and will write a journal style report summarizing their research project.

CHEM 4300: Instrumental Analytical Chemistry

3 Credit Hours

Prerequisite: CHEM 2800 and CHEM 2800L

Introduction to chemometrics. Theoretical principles and uses of modern instrumental methods covering: spectroscopy, electroanalysis, and chromatographic separations.

CHEM 4310: Advanced Topics in Analytical Chemistry

3 Credit Hours

Prerequisite: CHEM 3601 or CHEM 3050

This course will discuss the advanced theories and methods in analytical chemistry emphasizing newer analytical methods in practice in modern laboratories.

CHEM 4310L: Advanced Analytical Chemistry Lab

1 Credit Hours

Prerequisite: (CHEM 2800 and CHEM 2800L)

Concurrent: (CHEM 3030 or CHEM 3800 or CHEM 4300)

Students will use modern chemical instrumentation to solve complex problems in analytical chemistry. Instrumentation will include FTIR, GC-FID, GC-MS, HPLC, CE, UV-Vis, LIBS and other techniques depending on faculty expertise.