

# CHEMISTRY LECTURE/LAB (CHMC)

## CHMC 2910 Chemical Research

**Credit Hours:** 4

**Prerequisites:** CHM 1045 and CHML 1045 or CHM 1045H and CHML 1045H - both courses with a grade of "C" or higher

**Lab Fee:** Yes

This course will introduce students to the general principles and practical implementation of chemical research. Students will conduct research under the guidance of the instructor and may work individually or in a group. Skills to be learned include, but are not limited to the following: forming testable hypotheses; researching and critiquing literature; designing and conducting scientific experiments; collecting and organizing data; analyzing data and making appropriate conclusions; and presenting research results.

## CHMC 3005 Physical Chemistry for Life Sciences

**Credit Hours:** 4

**Prerequisites:** CHM 2211, CHML 2211, PHY 2049, and MAC 2312 - all courses with a grade of "C" or higher

**Lab Fee:** Yes

This course will use mathematical models to measure, describe, and predict the behavior of chemical systems based on physical laws with emphasis on biological applications. The lecture component will cover principles of thermodynamics, gas laws, chemical equilibrium, kinetics, electron transfer reactions, elementary quantum theory, and spectroscopy. The laboratory component will focus on measurements and interpretation of physical properties related to the main lecture topics.

## CHMC 3120 Analytical Chemistry with Laboratory

**Credit Hours:** 4

**Prerequisites:** CHM 1046 and CHML 1046 - both courses with a grade of "C" or higher and admission to Bachelor's program required

**Lab Fee:** Yes

This course defines and illustrates the analytical approach to chemical analysis. It is devoted to the exploration of quantitative analysis, statistical treatment of data, acid-base equilibria and titrations, precipitation and complex formation, electrochemistry, oxidation-reduction, spectro-photochemical analytical methods and chromatographic techniques. This is a combined lecture and laboratory course.

## CHMC 4139 Bioanalytical Instrumentation with Laboratory

**Credit Hours:** 4

**Prerequisites:** CHMC 3120 with a grade of "C" or higher

**Lab Fee:** Yes

This course is an introduction to the theory, design, and operation of advanced instrumentation currently used in research and quality assurance laboratories for analysis and characterization of organic and biomolecules. Topics include spectroscopic techniques, separation techniques, electrochemical methods, and statistical treatment of data. Principles of the techniques, instrument operation and instrument limitations will be discussed and laboratory experiments will be performed using instrumentation.

## CHMC 4410 Physical Chemistry with Laboratory

**Credit Hours:** 4

**Prerequisites:** CHM 1045, CHML 1045, CHM 1046, CHML 1046, PHYC 2053, PHYC 2054, and MAC 2313 - all courses with a grade of "C" or higher and departmental approval or admission to Bachelor's program required

**Lab Fee:** Yes

This course will use mathematical models to measure, describe, and predict the behavior of chemical systems based on physical laws. The lecture component will cover Principles of Thermodynamics, Gas Laws, Chemical Equilibrium, Kinetics, and Elementary Quantum Theory. The laboratory component will focus on measurements of physical properties related to the main lecture topics. Combined course: lecture and laboratory.