CHEMISTRY (CHEM)

CHEM 805 – Chemical Management & Safety for HS Teachers  1 credit hour
This course addresses chemical management and safety issues that are commonly encountered in high school chemistry laboratories and stockrooms.

CHEM 810 – Environmental Chemistry for High School Teachers  3 credit hours
A study of the fate of chemicals in the air, water, and soil, and their impact on human health and the natural environment. Topics will include water pollution and water treatment, greenhouse gases and ozone-layer destruction, sources and management of hazardous wastes.

CHEM 811 – Biochemistry for High School Teachers 3 credit hours
Will cover in-depth; acid-base concepts, and coordination compounds. Designed specifically for high school teachers. The following topics will be covered in-depth: laboratory equipment and techniques, accuracy and precision, QA and QC, solubility, acid-base equilibrium, titrations, electrochemical methods, and spectroscopy. Students should have a strong background in general chemistry topics prior to enrolling in this course.

CHEM 812 – Instrumental Analysis for High School Teachers  3-4 credit hours
The following topics will be covered in-depth: titration, absorption and emission spectroscopy, chromatography. Laboratory exercises emphasize materials to be used with high school students.

CHEM 820 – Inorganic Chemistry I for High School Teachers 1-4 credit hours
Designed specifically for high school teachers. The following topics will be covered in-depth: atomic theory, periodic trends, and chemical bonding. Laboratory exercises will emphasize materials that can be used with high school students.

CHEM 821 – Inorganic Chemistry II for High School Teachers  1-4 credit hours
The following topics will be covered in-depth: descriptive inorganic chemistry, acid-base concepts, and coordination compounds. Designed specifically for high school teachers. The following topics will be covered in-depth: atomic theory, periodic trends, and chemical bonding. Laboratory exercises will emphasize materials that can be used with high school students.

CHEM 822 – Transition Metal Chemistry for High School Teachers  2 credit hours
This course builds on CHEM 820 and emphasizes more advanced topics in Inorganic Chemistry pertaining to the structure and properties of transition metals and the complexes they form. Grade 7-12 teaching applications, demonstrations and laboratory exercises are discussed. Credit will not be granted for both this course and CHEM 821.

CHEM 823 – Nanoscience for High School Teachers  1 credit hour
This course provides an introduction to the preparation and properties of nanoscale materials in connection to current and future scientific applications. Approaches to integrating nanoscience in grade 7-12 instruction will be explored. Specific materials systems discussed will be influenced by the publicity of recent research breakthroughs and may include quantum dots, gold and silver nanosensors, semiconductor nanoparticles, and carbon nanotubes. Credit will not be granted for both this course and CHEM 821.

CHEM 840 – Organic Chemistry I for High School Teachers  3 credit hours
This course is designed for high school teachers to introduce organic chemistry emphasizing the concepts that will be important for the subject’s students who will encounter these topics in their professional studies. Emphasis will be on traditional organic chemistry areas including nomenclature, reactions, and mechanisms. This class is offered for 3 credits without laboratory.

CHEM 850 – Biochemistry for High School Teachers  3 credit hours
Chemistry of fats, protein, carbohydrates, hormones, vitamins, and other biologically important compounds. A solid background in organic chemistry is needed for success in this course.