

CHEM 7420 Mass Spectrometric Analysis (1,*,*)

Prerequisite: Postgraduate standing

This course aims to provide students with in-depth knowledge on mass spectrometry and its application for environmental analysis, pharmaceutical analysis, bioanalysis and food analysis.

CHEM 7430 Parmaceutical and Traditional Chinese Medicinal Analysis (1,*,*)

Prerequisite: Postgraduate standing

This course aims to provide students with in-depth knowledge on selected topics in pharmaceutical and traditional Chinese medicinal analysis.

CHEM 7440 Bioanalysis (1,1,0)

Prerequisite: Postgraduate standing

This course intends to introduce students to methods that are used to analyse compounds of biological importance. Principles of modern bioanalytical techniques that are used to measure biomolecules and techniques that use biological processes for analyte detection will be discussed. Students will gain an overview of current advancements in bioanalysis.

CHEM 7450 Chemosensor and Biosensor (1,1,0)

Prerequisite: Postgraduate standing

Introduction to the field of chemosensor and biosensor, as well as an in-depth and quantitative view of the sensor design and performance analysis. Fundamental application of chemo/biosensor theory will be demonstrated including recognition, transduction, signal acquisition, and post processing/data analysis. Topics are selected to emphasize biomedical, bio-processing, environmental, and food safety application.

CHEM 7460 Forensic Analysis (1,1,0)

Prerequisite: Postgraduate standing

The course intends to introduce students the concept of forensic analysis using various daily-life scenarios. In particular, modern analytical approaches and techniques will be demonstrated in solving these forensic cases. Students will also gain an insight on the latest research trends of forensic science.

CHEM 7470 Food Analysis (3,3,0)

Prerequisite: Postgraduate standing

This course discusses methods for food analysis in relation to the nutrition and safety aspects of food products, which are of increasing importance as industries strive to meet rising consumer expectation and regulatory requirements. This course addresses the principles and applications of various analytical tools in food analysis. Most up-to-date analytical techniques for food monitoring with local relevance will be discussed in detail.

CHEM 7480 Food Microbiology for Chemists (1,1,0)

Prerequisite: Postgraduate standing

For students with minimal microbiology background, this course addresses the principles and applications of various analytical tools in food microbiological safety. Analytical techniques, both conventional and novel, for food microbiological safety monitoring with local relevance will be discussed in detail.

CHEM 7710 Current Topics in Chemistry (3,3,0)

Prerequisite: Research postgraduate student standing

This course is devoted to the study of important current topics in different areas of chemistry. Possible topics included Chemosensors and Biosensors, Advanced Polymer Chemistry, Structure and Chemistry of Nucleic Acids, Mass Spectrometry, Electroanalytical Chemistry, Total Synthesis of Natural Products, Physics and Chemistry in Display Technology.

CHEM 7720 Structural Methods in Chemistry (3,3,0)

Prerequisite: Research postgraduate student standing or consent of instructor

This course is aimed to introduce the various physical techniques commonly used in structure determination to the postgraduate research students in chemistry. The emphasis will be on the

practical applications of these techniques in solving structural problems in chemistry rather than on a detailed discussion of the physical principles behind each technique. The techniques that will be covered include NMR, EPR, mass spectrometry and X-ray crystallography.

CHEM 7730 Analytical Process and Applied Statistics (3,2,0)

Prerequisite: Postgraduate standing

The objective of this course is to help the students to develop an analyst's approach to solve chemical analytical problems by equipping them with important basic tools including statistics, sampling and analytical planning, data treatment and interpretation, and experimental design.

CHEM 7740 Chemical Instrumentation (3,2,0)

Prerequisite: Postgraduate standing

Important concepts and developments in chemical instrumentation will be introduced. The student will acquire a better appreciation of the capabilities and limitations of these new tools which will help them make better choices of instruments and methods in real life analytical problems. The material in this course will be updated from time to time to reflect the most recent trend in instrument development.

CHEM 7760 Analytical Spectroscopy (3,2,0)

Prerequisite: Postgraduate standing

This course reviews the basic principles of modern spectroscopy and their applications at an advanced level. Emphasis is laid on the instruments used most commonly in elemental analysis (atomic spectroscopies) on the one hand and those for the analysis of molecular and ionic species in solution (optical spectroscopies) on the other.

CHEM 7770 Polymer Chemistry (3,3,0)

Prerequisite: Research postgraduate student standing

This course is designed to introduce topics covering polymerization processes, characterization of polymers and polymer related technology.

CHEM 7780 Bioorganic and Natural Products Chemistry (3,3,0)

Prerequisite: Research postgraduate student standing

This course deals with the biosynthesis of natural products of all kinds. The interaction of some natural and synthetic molecules with living systems are to be discussed.

CHEM 7790 Organic Synthesis (3,3,0)

Prerequisite: Research postgraduate student standing

This course gives an outline on the basic concepts and methodologies of building up an organic molecule. Topics covered include carbon-carbon bonds formation, functional groups transformations and total synthesis of several selected molecules of widely differing types of structure.

CHEM 7800 Organometallic Chemistry (3,3,0)

Prerequisite: Research postgraduate student standing

The objective of this course is to provide a concise introduction to Organometallic Chemistry. Upon completion of the course, the students will have a fundamental understanding of (1) reaction mechanisms, (2) synthesis and reactivities, and (3) industrial applications of organometallic complexes.

CHEM 7810 Advanced Materials (3,3,0)

Prerequisite: Research postgraduate student standing

This course is devoted to the study of important topics in different areas of advanced materials with current research interest.

CHEM 7820 Food Safety Analysis (3,2,0)

Prerequisite: Research postgraduate student standing

This course addresses the principles and applications of various analytical tools in food safety analysis. Most up-to-date analytical techniques for food safety monitoring with local relevance will be discussed in details.