CHEM 4075 Marine Chemistry

Prerequisite: Any Science majors with Year III standing

(3,3,0) (E)

This course describes the nature and the chemical process in the marine environment. It aims to provide an in-depth understanding of the interrelationship of chemistry and other marine science disciplines and our daily life. Major ion composition of seawater, inputs to and outputs from the ocean via rivers, the atmosphere and the sea floor, biogeochemical cycles within the oceanic water column and sediments, recent discoveries and development in marine chemistry will be briefly discussed.

CHEM 4076 Chemical Testing Laboratory (4,*,*) (E) Management and Accreditation

Prerequisite: CHEM 3005 Instrumental Analysis or CHEM 3025 Chemical Analysis

The course intends to introduce students the concept of quality management system in chemical and testing laboratories. In particular, concept of ISO 9001 and ISO/IEC 17025 will be emphasized. Through laboratory practice, students will also acquire adequate technical skills in the maintenance and calibration of analytical equipment and instruments.

CHEM 4077 Dissertation in Analytical and (3,*,*) (E) Testing Sciences

Prerequisite: Chemistry majors Year IV standing To train students to conduct detailed and extensive literature search on current topics in pure and applied chemistry. To train students to organize and present the relevant information gathered

from such search in a dissertation format.

CHEM 4085 Food Analysis (3,3,0) (E) Prerequisite: CHEM 3005 Instrumental Analysis or CHEM 3025 Chemical Analysis

This course addresses the basic principles, procedures, instrumentations, and applications of food analysis. Emphasis will be placed on the chemical, physical, and microbial analysis of the major components and harmful substances in foods.

CHEM 4086 Forensic Analytical Chemistry (3,3,0) (E) Prerequisite: BIOL 2005 Biological Chemistry or CHEM 2008-9 Organic Chemistry I & II, or CHEM 2036 Fundamentals of Organic Chemistry

To provide students the advanced analytical methods in forensic chemistry for their applications to the analysis of controlled substances and materials with an emphasis on new method development.

CHEM 4878-9 Final Year Project I & II (3,0,9) (E)

Prerequisite: Chemistry majors Year IV standing To guide students in the development of research methodology appropriate to the practice of chemistry and to give opportunity to students to work on problems that have practical significance.

CHEM 4888-9 Environmental Studies (3,*,*) (E) Project I & II

Prerequisite: Chemistry majors (Year IV standing) in Environmental Studies Concentration

To guide students in the development of research methodology appropriate to the practice of environmental studies and to give opportunity to students to work on problems that have practical significance.

CHEM 4898-9 Final Year Project I & II (3,0,9) (E)

Prerequisite: Chemistry majors Year IV standing

To guide students in the development of research methodology appropriate to the practice of chemistry and to give opportunity to students to work on problems that have practical significance.

CHEM 7210 Analytical Process and Applied (2,2,0) Statistics

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 7220Chemical Instrumentation(2,2,0)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 7240Analytical Spectroscopy(2,2,0)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 7250 Laboratory Management (2,2,0)

Prerequisite: Postgraduate standing

The objective of this course is to introduce concepts of quality assurance, issues pertaining to laboratory management, basic principles of experimental design and chemometrics, and methods for efficient management of analytical laboratories.

CHEM 7270 Electroanalytical Chemistry (1,1,0)

Prerequisite: Students of MSc in Analytical Chemistry This course illustrates the basic principles and applications of modern electroanalytical methods at the advanced level.

CHEM 7280 Surface Analysis

Prerequisite: Students of MSc in Analytical Chemistry This course provides a detailed treatment of surface analytical techniques, such as XPS, AES, SEM and EDX. Applications of these techniques in the studies of heterogeneous catalysis, polymer, semiconductor, material corrosion, etc. will be

CHEM 7311-2 Advanced Analytical Laboratory (1,*,*) CHEM 7313 Advanced Analytical Laboratory (2,*,*) Prerequisite: Part-time students of MSc in Analytical Chemistry These courses aim to provide thorough hands-on experience needed to perform analytical measurements with modern instrumentation. Emphasis will be put on the in-depth understanding of the instrumentation, the procedures for the optimization of experimental conditions and the operation of the instrument for analytical measurements and also on the analytical approach to tackle problems encountered in practical laboratories.

CHEM 7331-2 Dissertation

demonstrated to the students.

(3,*,*)

(1,1,0)

Prerequisite: Students of MSc in Analytical Chemistry A 15-month (part-time) dissertation on an analytical related topic is to be completed independently by each candidate under the supervision of faculty members in the Department of Chemistry or in conjunction with qualified scientists or experts in industrial, government, or other testing laboratories.

CHEM 7340 Environmental Analysis and (1,1,0) Monitoring

Prerequisite: Students of MSc in Analytical Chemistry

This course provides students with conceptual information, general principles and practical utility of important environmental sampling and analysis techniques most commonly used in environmental research and pollution control.