

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

Prerequisite: Analytical and Testing Sciences majors Year IV standing

To guide students in the development of research methodology appropriate to the practice of Analytical and Testing Sciences and to give opportunity to students to work on problems that have practical significance in the testing industry.

**CHEM 4885 Summer Research Project (3,0,9)**

Prerequisite: Chemistry majors of International Student Status

To guide students in the development of research and problem-solving skills appropriate to the practice of chemistry and to provide an opportunity to students to work on problems that have practical and intellectual significance.

**CHEM 4895 Research Project in analytical and Testing sciences (3,0,9)**

Prerequisite: Analytical and Testing Sciences minors Year IV standing and consent of the instructor

To guide students in the development of research methodology appropriate to the practice of analytical and testing sciences and to give opportunity to students to work on problems that have practical significance in the testing industry. (For Analytical & Testing Sciences Minors only)

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

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)**

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 Statistics (2,2,0)**

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 7220 Chemical 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 7240 Analytical 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 (1,1,0)**

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 demonstrated to the students.

**CHEM 7331-2 Dissertation (3,\*,\*)**

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 Monitoring (1,1,0)**

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.

**CHEM 7350 Sample Pretreatment Methods (1,1,0)**

Prerequisite: Postgraduate standing

This course introduces the principles and applications of traditional and modern sample pretreatment methods, including Soxhlet extraction, microwave extraction, pressurized liquid extraction, supercritical fluid extraction and solid-phase microextraction. Emphases will be placed on the sample pretreatment of herbal materials and foods.

**CHEM 7380 Food Safety Analysis (2,2,0)**

Prerequisite: Postgraduate 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.

**CHEM 7390 Separation Science (3,3,0)**

Prerequisite: Postgraduate standing

This course provides a systematic study of the modern techniques of gas chromatography, high-performance liquid chromatography, ultra-performance liquid chromatography and capillary electrophoresis. Emphasis will be placed on the theory, principle and application of these analytical separation techniques to real-world chemical analysis.

**CHEM 7401-2 Seminar I & II (0.5,\*,0)****CHEM 7403-4 Seminar III & IV (0.5,\*,0)**

Prerequisite: Postgraduate standing

Regular seminars will be organized which must be attended by MSc students. Speakers from outside or inside institutions and industries who are experts of a particular field will deliver lectures on the topics of food analysis, drug analysis, and environmental analysis, etc. This will enlighten students on current trends and developments in chemical analysis, in analytical problems of global and local interests.

**CHEM 7411-2 Advanced Analytical Laboratory (2,\*,\*)**

Prerequisite: Students of MSc in Analytical Chemistry

These courses aim to provide thorough hands-on experience for students to perform and understand modern analytical instrumentation.