

Master of Science (MSc) Program in Analytical Chemistry

Program Director:

Ian D. WILLIAMS, Professor of Chemistry

The Master of Science (MSc) program in Analytical Chemistry aims to prepare bachelor's degree holders from the Chemical and Physical Sciences discipline for employment and career in analytical laboratory. The areas of study range from materials and forensic testing to environmental sampling and food quality control. By focusing on both the background principles of modern analysis techniques and emphasis on analytical problems applied to the real-world, the program provides students with significant advantage in the job market.

The program covers key aspects of modern analysis methods with clear explanation on the physical principles behind the techniques and numerous examples showing how the techniques apply to a wide range of analytical problems. It also contains modules for extensive experimental hands-on experience including both a laboratory-based course and an individual or group project. Safety training, risk assessment and laboratory management skills are also included in the study.

Program Learning Outcomes

On successful completion of the program, graduates will be able to:

- Explain the working principles and application of a wide range of modern analytical techniques to diverse fields from forensics and pharmaceuticals to the environmental and materials sciences;
- Solve practical analytical problems by selection of the most appropriate available technique and either adapt or extend existing methodologies to new systems, obtaining reliable results, through appropriate calibration and data processing;
- Critically analyze scientific data, correctly handling experimental errors and distinguishing the precision (reproducibility) and accuracy (correctness) of analytical data, and identifying possible sources of systematic error, such as interferences; and
- Execute modern laboratory best practices, with a view to emphasizing safety, minimizing hazardous waste, and incorporating risk assessment exercises for projects and individual experiments, and, where appropriate, identify legal issues and comply with any relevant regulations.

Admission Requirements

Applicants must possess a bachelor's degree in Chemistry or a related subject with second class honors or higher from a recognized institution.

Program Duration

The normal period for completing the program is one year in full-time mode and two years in part-time mode.

Program Fee

The program fee is HK\$120,000 for 30 credits.

Curriculum

Students are required to complete 30 credits of coursework, including five core courses (15 credits), two to four elective courses (6 - 12 credits), and one to three experimental / practical courses (3 - 9 credits), including the compulsory laboratory course CHMS 5201.

a) Core courses (15 credits)

CHMS 5010	Chemical Data Analysis
CHMS 5020	Elemental Analysis
CHMS 5030	Molecular Analysis
CHMS 5040	Separation Methods
CHMS 5050	Optical and Electrical Methods

b) Elective courses (6 - 12 credits)

CHMS 5110	Environmental and Food Analysis
CHMS 5120	Macromolecular Analysis
CHMS 5130	Materials Analysis
CHMS 5140	Laboratory Management

Substitution of other courses for electives may be allowed upon the approval of the Program Director and the course instructor.

c) Experimental / Practical courses (3 - 9 credits)

All students must take the compulsory laboratory course CHMS 5201.

CHMS 5201	Analytical Instrumentation Laboratory I
CHMS 5202	Analytical Instrumentation Laboratory II
CHMS 6980	Analytical Research Project

Part-time students may take a maximum of 9 credits in each term.

Graduation Requirements

Students must complete the program with a graduation grade average (GGA) of 2.850 or above as required of all postgraduate students at the University.