Democratic and Popular Republic of Algeria
Ministry of Higher Education and Scientific Research
Setif 1 University – Ferhat Abbas

Faculty: Sciences

Department of Chemistry

Professional Master:

Analytical chemistry and analysis

Presentation and Objectives of the Specialty:

• Practical and theoretical research in Analytical Chemistry and Analysis uses chemical principles to identify, quantify, and describe compounds. Modern analytical methods are used to evaluate the composition, purity, and characteristics of medicinal, food, environmental, and industrial items. This speciality prepares professionals to use advanced lab equipment, evaluate complex data, and implement quality management systems. This speciality teaches professionals to use advanced lab equipment, analyse complex data, and establish quality management systems. This intersection of fundamental chemistry and industrial applications is essential for verifying product conformance and detecting impurities and pollutants..

The main objectives of this specialty are to train experts capable of:

- Master chemical analysis techniques
- Ensure quality control
- Develop and validate analysis methods
- Interpret and validate results
- Manage an analysis laboratory
- Contribute to research and development

Access conditions:
A degree in chemistry
- classification in the academic curriculum

- A degree in chemistry
- Ranking in academic curriculum.

Professional screenings:
The Professional Master's in Analytical Chemistry and Analysis is geared for immediate employment and has a high employability rate. Students interested in research or higher education can get a PhD. Activity sectors:
- Pharmaceutical and cosmetics industry
- Food industry
- Environment
- Petrochemicals and energy
- Materials
- Health and biomedical
- Research and Development
- Customs, fraud, forensic science and expertise.

Curriculum Highlights:

Combining in-depth academic knowledge with practical experience and quality control techniques, the curriculum of this speciality gives employability a great priority. This makes graduates much sought after in many different fields including industry and research. These are the primary elements usually seen in this kind of formation:

- Solid practical and experimental anchoring acquired through many hours of work practices.

- Mastery of modern analytical techniques: **(spectroscopy, separative methods,** analytical electrochemistry, quality control, chemometrics and data processing)

- Cross-functional and professional skills: (problem solving, communication technical, scientific, project management and teamwork)

- Professional internships

Admission Information:

The current application of Articles 171 and 1023 of the decrees:

- The acquisition of skills and knowledge is assessed every six months through continuous assessment and a final exam.
- The transition from the first to the second year is automatic if the student has validated the first two semesters of the training program.
- The student's assessment covers, depending on the training program, lectures, practical work, tutorials and practical placements.

Organization of Studies and Official Duration of the Program:

Program Overview:

Semester 01:

Spectral Analysis Methods I
Chemistry Analytics and reactions in aqueous solutions
Quantitative analysis methods
Analysis and Characterization by DRX
Practical work Physicochemical techniques s
Analytical Chemistry Practical Work
Organic chemistry

Semester 02:

Analytical Electrochemistry
Physicochemical Analysis of Surfaces and Corrosion
Phase Separation and Chromatography Methods
Spectral Analysis Methods II Practical
Physicochemical Analysis Techniques II Practical
Physical and Mineral Chemistry
Quality Management
English

Semester 03:

Microscopic techniquesin surface analysis
Water treatment
Analytical chemistry in the service of science and society
Spectroscopic techniques in surface analysis
Pratical work Quality Control
Pratical work Application: separation methods
Thermal methods of analysis
Bibliographic research methodology

Semester 04:

Internship in a research laboratory or in a company, resulting in a final dissertation and and oral presentation

Program coordinator: Pr. Lakhemici KABOUB

Contact: lakhemici.kaboub@univ-setif.dz

Basic training modules:

These modules aim to consolidate fundamental knowledge in analytical chemistry and to introduce the main analysis techniques:
- Analytical Chemistry
- Spectroscopic Methods
- Separative Methods (Chromatography)
-Physicochemical Analysis of Surfaces and corrosion
- Analytical Electrochemistry
- Quality and Regulations.
- Computer Tools and Chemometrics -
- Cross-disciplinary Skills: English scientist, scientific communication and management of project.

Advanced training modules:

These modules cover specific methods and applications, frequently related to industry demands and new breakthroughs.:

-Coupled Techniques and Mass Spectrometry Advanced: Chromatography-spectrometry mass
- Advanced NMR and other techniques characterization
- Sector Specific Analysis:

  - Environmental Analytical Chemistry
  - Pharmaceutical and Cosmetic Analytical Chemistry:
  - Food Analytical Chemistry.
  - Materials Analysis
  - Advanced Chemometrics and Modeling: Design of Experiments for Method Optimization.

- Quality management and regulations in-depth
- Research Project / Professional Internship: A element allowing to put into practice the knowledge and skills acquired in a research laboratory or company.

Language of instruction:

French and English

Training outline: The tables provided in the previous section "Program Overview"