

## Conditions of access

### The M2 can be followed by students who:

- Have successfully finished the first year of one of the following master's (M1) courses - Chemistry, Chemistry and Physics, Biochemistry, Chemical Engineering or Physical and Chemical Sciences.
- Qualified pharmacists
- Life-Long Learning candidates (receiving a salary from the Fongecif, jobseekers, people validating professional experience).

To follow the M2 in Analytical Chemistry and Instrumentation, the candidate's written application and interview are assessed by the recruitment board.

The M2 is organised and run by the Pedagogical Council of the diploma composed of the following members: Véronique Gilard, Dominique de Caro, Cécile Baudoin, Chantal Galaup, Michel Gougeon.

## Master Engineer Programme

A master engineer programme (CMI) confers a label to students who have successfully completed a specific 5-year programme covering the BSc and the MSc. The label recognises the quality of the student's results and must respect particular specifications. For more detailed information (in French) please visit the FiGuRe website <http://www.reseau-figure.fr/> and our M2 website.

To follow the CMI programme, a student must enroll in the Fundamental and Applied Sciences BSc, then in the Chemistry M1 before joining the Analytical Chemistry and Instrumentation M2. It is possible to join the programme in the second or third years of the BSc, after an HND, or in M1, on condition that a written application is accepted by the examining board.



## CONTACTS

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### HEAD OF STUDIES

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### INFORMATION

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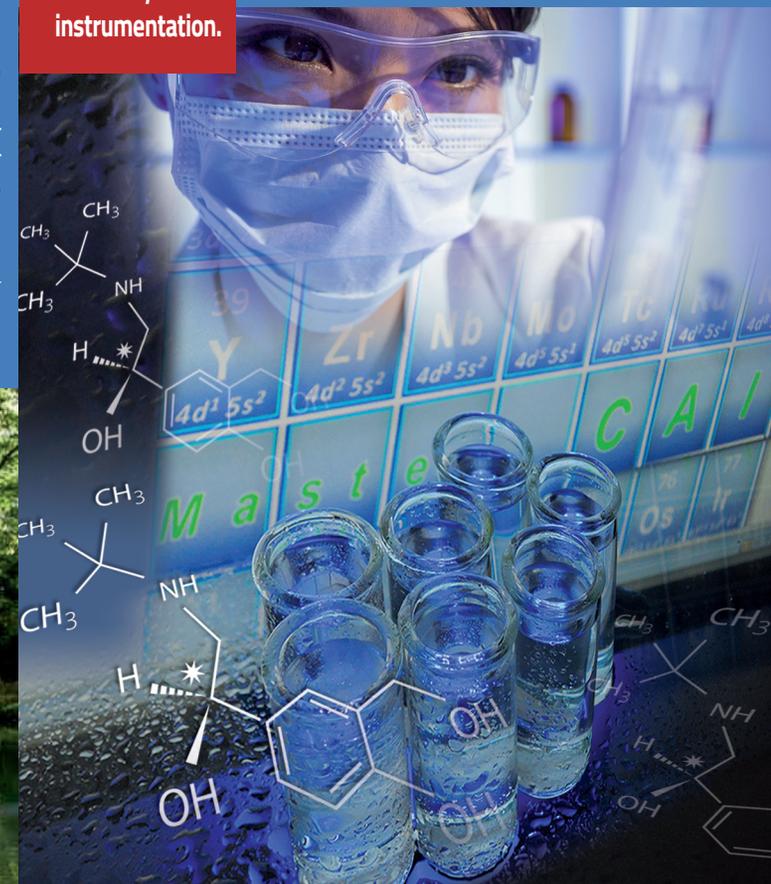
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To train  
analytical  
chemists,  
ensuring they  
have a good  
command of  
the various  
techniques  
encountered  
in analysis and  
instrumentation.

## MASTER of Sciences 2nd year

# Analytical Chemistry and Instrumentation



### Organisation of the course - Teaching programme

#### Semester 9 | September to December (30 ECTS)

theoretical and practical teaching involves about 40 collaborators:  
teacher-researchers, researchers and industrial partners.

##### ■ Spectroscopic techniques | 6 ECTS

Ultraviolet, molecular fluorescence, infrared, Raman, nuclear magnetic resonance, mass spectrometry, atomic absorption and emission.

##### ■ Separation and other techniques | 6 ECTS

Separation: gas chromatography, high performance liquid chromatography, supercritical chromatography, capillary electrophoresis, Thermal analysis techniques, X-ray diffraction, Electrochemical techniques, Immunochemistry, Chemiometry

##### ■ Workshops and conferences | 6 ECTS

Analysis of articles, bibliographic reviews of research work and of recent experimental updates.

##### ■ Opening towards the world of business | 3 ECTS

The tools of management, project management, finance and business plan. Personalized tools to find a job (CV, interview simulations, etc.)

##### ■ English | 3 ECTS

Oral expression, discussions, analysis of publications, making the students professionally operational in an English-speaking environment (some will be working abroad in semester 10).

##### ■ Practical work | 6 ECTS

Following through a project on a specific issue in an analytical context.

The students are given ample independence to carry out their project to its conclusion. Each of the projects is presented as a poster before the teaching staff and the whole class.

A well equipped analytical laboratory, with a collection of high-performance machines is reserved for this teaching project.

#### Semester 10 | January to June (30 ECTS)

### 6-month internship in industry in France or abroad

##### ■ Partner Companies

The teaching programme relies on a strong partnership with industry established over the years since the creation of the diploma in 2001 and is supported by a solid alumnus network.

The companies that take our interns and support our programme cover numerous fields of activity.

##### Internships can be in France or abroad, we can mention:

- **Locally:** Sanofi Aventis, Laboratoires Pierre Fabre, Avogadro, Alphamos, Picometrics;
- **Nationally:** Sanofi Pasteur, Eurofins, Becton Dickinson, Qualtech, Total;
- **Internationally:** BASF (Germany), Novartis (Switzerland), TCI Chemicals (Japan).

Internships can also be carried out in institutes such as the INPS (forensic science), IFREMER (ocean research), INERIS (industrial environment and risks).



#### Analytical techniques - Machines available:

##### Spectroscopy

UV, Fluorescence, IR, Raman, Atomic absorption,

##### NMR

##### Mass spectrometry

##### Separation Techniques

GC-FID, GC-MS, HPLC-DAD, HPLC-UV, HPLC-UV/Fluo, LC-MS/MS, UPLC-MS/MS, Capillary electrophoresis.

#### Careers

With the skills they have acquired, the graduates of the course occupy positions of responsibility in analytical departments in various sectors of activity such as agro-food, chemistry, the environment, instrumentation, pharmacy or health.

Positions directly available include research engineer in analytical development (researcher, project leader), after sales engineer, engineer for technical support, commercial engineer, head of analytical instrument pool.