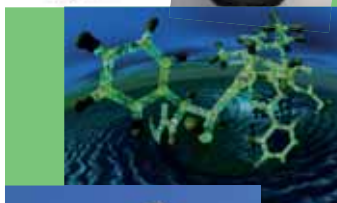




# Master in Chemistry and Life Sciences

## Organic Synthesis for the Pharmaceutical and Agrochemical Industries

(Research & Professional)



### FURTHER INFORMATION and APPLICATIONS

Jean-Francois.Poisson  
@ujf-grenoble.fr

Sandrine.Py  
@ujf-grenoble.fr

Service Scolarité  
UFR Chimie et Biologie

Université Joseph Fourier,  
Bat E, 301 rue de la chimie,  
BP 53, 38041 GRENOBLE  
Cedex 9

Phone. +33 4 76 51 45 42  
Fax +33 4 76 51 41 75

### A TWO-YEAR POST-BACHELOR DEGREE

The « Organic Synthesis for the Pharmaceutical and Agrochemical Industries » (SO-IPA) program which is part of the Grenoble Master in Chemistry was elaborated in concert with professionals from the chemical industries and in partnership with Claude Bernard university in Lyon. This program is built on the expertise of the Rhone-Alpes network of research laboratories in state-of-the-art Organic Synthesis, and on lectures given by professionals from well-known national and international firms specialised in the area of fine chemicals, pharmaceuticals and agrochemicals.

#### ➤ Skills at aim

- ⌘ Synthesis, purification, and characterisation of bio-active molecules
- ⌘ Research and development, optimisation
- ⌘ New technologies, supported synthesis, green chemistry

#### ➤ Careers

##### **Research Program :**

PhD thesis

Careers in Research, R&D or Engineering in national or international universities, research organisations (CNRS, CEA, INSERM) or pharmaceutical, agrochemical, perfume, fine chemicals industries ....

##### **Professional Program :**

**A 6 months internship in an industry is mandatory**

Employability: laboratory executives, chemist executive in a small/middle size company, in a start-up, in a kilo-lab, in a R&D or a process unit in France or abroad

**A 4-semester program** adapted to your career objectives and to the requirements in industry: the program of each course has been established after a survey among professionals from the chemical industry.

### ADMISSION AND APPLICATIONS

The course program is built over two years with a progressive specialization.

#### During the first year (M1)

Accession to the first year (M1) is possible for any student with a valid Licence (Bachelor). Bachelors in Chemistry, Biochemistry or Chemical-Biology are greatly appreciated, or any equivalent as initial or life-long education.

#### During the second year (M2)

Students with 60-valid ECTS after a first year of a Master program or Equivalent can apply to the « Organic Synthesis for the Pharmaceutical and Agrochemical Industries ». Access to the Master 2 program is nevertheless submitted to acceptance by the program directors, after students grades and records have been examined and eventually after interview.

Applications can be downloaded on the Université Joseph Fourier website : [www.ujf-grenoble.fr](http://www.ujf-grenoble.fr) under Studying> Applications and Registration > Chose the tab that best correspond to your profile.



# Master in Chemistry and Life Sciences

## Organic Synthesis for the Pharmaceutical and Agrochemical Industries

(Research & Professional)

The first year (M1) contains general courses, followed by more specialised courses (Organic Chemistry, Organometallic Chemistry, Chemistry of Biomolecules, Mini-project in synthetic organic chemistry) and a 2-months long internship (or longer) starting in April.

The second year (M2) strengthens this specialisation. It contains courses that follow up on the M1 courses and a 6-months long (at least) internship in a research laboratory or in an industry. Detailed organisation follows:

### ACADEMIC RESEARCH (R)

#### SEMESTER 1 (30 ECTS)

##### 5 mandatory courses:

##### Strategies in Synthetic Chemistry

Imagine the best logical disconnections of a complex molecule.

##### Asymmetric Synthesis

The main routes and methodologies to enantioselective synthesis.

##### Heterocyclic Chemistry

An industrial prerequisite: synthesis and reactivity of heterocycles.

##### Green Chemistry

New reaction mixtures, reactants and supported syntheses, clean processes, bio-transformations...

##### Bibliographical Project

##### A selection of 2 courses among:

##### Industrial Synthesis

##### Main Classes of Drugs

##### Molecular Modelling

##### Applications of Biomolecules

##### Biocatalysis

#### SEMESTER 2 (30 ECTS)

##### Internship in a Research Laboratory

January to June

##### Optional courses or Foreign

##### Language

(3 ECTS) actually taken during the 1<sup>st</sup> semester

### INDUSTRY (P)

#### SEMESTER 1 (30 ECTS)

##### 4 mandatory courses common to (R):

##### Strategies in Synthetic Chemistry

##### Asymmetric Synthesis

##### Heterocyclic Chemistry

##### New Technologies in Chemistry; Green Chemistry

##### 4 professional courses :

##### Professional environment

Health and Safety, Quality Control, Standards, Labour Law, DOE, Project Management, Communication

##### Tutored Projects

Implementation of a synthetic project with bibliographical search, elaboration of an experimental protocol, project accomplishment, purification, analysis and characterisation of the products

##### Industrial Synthesis

From milligrams to the ton of active material: modification of the synthetic pathway, constraints, processes, risk management (security, toxicity...)

##### Main Classes of Drugs

Introduction to the chemistry of therapeutics; antibacterial, antiviral, antifungal, anti-malaria, antitumor...

#### SEMESTER 2 (30 ECTS)

##### Internship in an Industry

February to July

##### Optional courses or Foreign

##### Language (3 ECTS)



*Conceive*

*Imagine,*

*Innovate,*

*Planning, Develop*

### AN EXCEPTIONNAL ENVIRONMENT

#### GRENOBLE

Internationally known research laboratories recognized by funding agencies (CNRS, INSERM, CEA...)

DCM, CERMAV, DPM, LMB, LCIB

#### An opening to international

Possibility of internship in foreign laboratories or and to validate study-abroad programs

#### A dynamic working atmosphere

The Gières-Saint Martin d'Hères-Grenoblecampus and the area offer multiple sport and cultural activities



***A complete education in this two-year program, maximum assets for employability.***