Master in Chemistry

Programme mnemonic
MA-CHIM
- Focus Research: M-CHIMA
- Focus Teaching: M-CHIMD
- Focus Professional: M-CHIMS

Studies level
Master 120 credits

Learning language
French

Schedule
Office hours

Studies category / subcategory
Sciences and technics / Sciences

Campus
Plaine and Solbosch

Programme objectives
Due to its central position among hard sciences, chemistry opens up extremely broad possibilities, with links to biochemistry, medicine, geology, physics, or biology. Creating materials with new properties, developing alternative energy sources, synthesising new medicines, ensuring high quality in foodstuffs, and monitoring and reducing pollution are all examples of the challenges that chemists take on. Today, chemistry is the cornerstone of many sustainable development topics. ULB’s Chemistry Department is fully aware of these challenges and trains students to analyse new societal problems and call upon their creative potential to solve them. The goal of the Master in Chemistry is to complete the basic training provided in the Bachelor programme, and develop the students’ analytical skills and autonomy.

Programme's added value
ULB’s Chemistry Department is ideally situated, both geographically and strategically. Located in Europe’s capital, at the heart of a vast network of chemical industries, the department provides high-level training through direct contact with SMEs and major players in the industry on the one hand, and with cutting-edge academic circles on the other hand.

Moreover, due to its international scientific reputation, it strives to provide excellent training in a multidisciplinary academic context, in line with the major technological and environmental issues of our time.

At the Master level, student mobility is encouraged in the form of work placements in private companies, either in Belgium or abroad.

Chemists play an active role in our society. The Master programme includes content targeting various professional activities (industries, research and teaching). In the professional world, graduates of this programme put their knowledge and skills into practice as chemists in research laboratories and production units, or as scientific experts and advisors. They are often hired in leading-edge chemical industries, in which they can quickly reach senior positions.

The Master programme’s curriculum allows students to:
- Develop specialised interdisciplinary knowledge
- Understand advanced concepts in the various branches of chemistry
- Acquire an interdisciplinary culture
- Conduct original research in a specialised branch of chemistry
- Show innovation and creativity
- Apply skills and knowledge to autonomously develop and manage a project
- Solve complex problems
- Identify risks and anticipate the consequences of decisions
- Integrate multidisciplinary aspects into project management
- Identify the potential for technological developments in a given research project in the field of chemistry (research focus)
- Recognise the industrial and economic importance of intellectual property (professional focus)
Be an active partner of multidisciplinary projects in a complex industrial context (scientific, economic, environmental, etc.) (professional focus)

Transpose the knowledge and methods acquired into various objects of study

ULB is the only comprehensive university located in the capital of Europe. Almost one third of its students are foreigners, a major asset that makes ULB the most open university in Belgium. The Chemistry Department includes various research groups that are internationally recognised, whose works were rewarded by several prestigious prizes. ULB’s Chemistry Department is the only one in Belgium that has received a Nobel Prize in Chemistry. The Chemistry Department also benefits from the scientific activities (symposia, conferences) organised by the Solvay Institutes of Physics and Chemistry located within the University.

Teaching methods

Lecture classes, practical activities, hands-on training, personal assignments, projects.

Succeed in your studies

ULB offers a number of activities and resources that can help you develop a successful strategy before or during your studies. You can make the transition to higher education easier by attending preparatory courses, summer classes, and information and orientation sessions, even before you start your studies at ULB. During your studies, many people at ULB are there specifically to help you succeed: support staff in each faculty, (inter-)faculty guidance counsellors, tutors, and experts in academic methodology.

International/Openness

Exchanges—lasting 6 to 12 months—with other Belgian or foreign universities can be organised. ULB has concluded partnerships with 10 secondary schools and around 20 companies, research laboratories or centres, offering attractive opportunities for work placements. Many exchange opportunities with foreign universities are available (see the list provided by the DRI) https://www.ulb.be/en/mobility/international

One fundamental goal of the Master in Chemistry is to give students a deep understanding of the basic concepts used in chemical sciences, and how they interact. The programme places emphasis on teaching autonomy, with personal projects and a Master’s dissertation to be defended at the end of the second year. The curriculum includes both theoretical and practical teachings. Six series of lectures must be chosen amongst the seven following:

- Polymer chemistry
- Macroscopic physical chemistry: from self-assembling to self-organisation,
- Strategies for organic synthesis,
- Computational approaches to the states of matter,
- Chemistry of interfaces and nanostructures,
- Chemistry and structure of biological macromolecules,
- Environmental chemistry and chemical risks.

Students also choose a number of elective courses in a field of interest, and complete a research-oriented dissertation in the second year, working within one of the department’s research units.

Job opportunities

In the professional world, graduates of this programme put their knowledge and skills into practice as chemists in research laboratories and production units, or as scientific experts and advisors. They are often hired in leading-edge chemical industries, in which they can quickly reach senior positions. A Master’s degree in Chemistry opens up job opportunities in the following areas:

- Industrial or academic research
- State-run services: crime laboratories, heritage conservation laboratories, health services, etc.
- Teaching
- Production
- Analysis
- Technical and commercial sectors
- Health

Chemists can be viewed as architects, creating new molecules, developing new materials, developing and optimising manufacturing processes, contributing to improving the quality of life in many areas (medicine, environment, energy, food, cosmetics, etc.).

Activity sectors

Chemical companies (petrochemical industry, polymers, fertilisers, fine chemistry, specialties, paints, pigments, oleochemistry, catalysts, etc.)

- Pharmaceutical companies
- Consumer goods (cleaners, glues, cosmetics, etc.)
- Environment, recycling
- Chemical engineering
- Analysis and control laboratories
- Research and development
- Teaching
- Academic sector (research and teaching in universities and higher education institutions)
- Federal institutions

Types of functions:

Research and development, intellectual property, product stewardship, project leading, etc.

The chemist can be viewed as an architect, creating new molecules, developing new materials, developing and optimizing
manufacturing processes, contributing to the improvement of the quality of life in many areas (medicine, environment, energy, food, cosmetics, ...)

**Contacts**

- ma-chim@ulb.ac.be
- +32 2 650 66 37

**Jury President**

Michel LUHMER

**Jury Secretaries**

Anne DE WIT (Research), Gwilherm EVANO (Research), Anne DE WIT (Teaching), Gwilherm EVANO (Teaching), Anne DE WIT (Professional) and Gwilherm EVANO (Professional)
One fundamental goal of the Master in Chemistry is to give students a deep understanding of the basic concepts used in chemical sciences, and how they interact. The programme places emphasis on teaching autonomy, with personal projects and a Master’s dissertation to be defended at the end of the second year.

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**Bloc 1 | M-CHIMA | MA-CHIM**

**Module 1: Cours de base**

**Six courses chosen from the following**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Coordinator(s)</th>
<th>Credits / Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHIM-F406</td>
<td>Chimie des polymères</td>
<td>Yves GEERTS (Coordinator)</td>
<td>5 credits [lecture: 36h, tutorial classes: 12h, practical work: 12h] French</td>
</tr>
<tr>
<td>CHIM-F408</td>
<td>Chimie physique macroscopique: de l'auto-assemblage à l'auto-organisation</td>
<td>Laurence RONGY (Coordinator) and Anne DE WIT</td>
<td>5 credits [lecture: 36h, tutorial classes: 24h] French</td>
</tr>
<tr>
<td>CHIM-F436</td>
<td>Stratégies de synthèse organique</td>
<td>Gwillerm EVANO (Coordinator)</td>
<td>5 credits [lecture: 36h, practical work: 24h] French</td>
</tr>
<tr>
<td>CHIM-F443</td>
<td>Approches computationnelles des états de la matière</td>
<td>Nathalie VAECK (Coordinator), Emilie CAUET and Martine PREVOST</td>
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<td>Chimie et structure des macromolécules biologiques</td>
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<td>Chimie de l'environnement et risques chimiques</td>
<td>Pierre-François COHEUR (Coordinator) and Laurence RONGY</td>
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**Module 2: TP obligatoires**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits / Sessions</th>
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<tbody>
<tr>
<td>CHIM-F482</td>
<td>Travaux pratiques intégrés</td>
<td>5 credits [practical work: 60h]</td>
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<tr>
<td>Code</td>
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<tr>
<td>BING-F4007</td>
<td>Compléments de biochimie et de microbiologie</td>
<td>Sigrid FLAHAUT and Nausicaa NORET</td>
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<td>CHIM-F4001</td>
<td>Rational drug design and PKPD modeling</td>
<td>Martine PREVOST and Jean-Christophe LELOUPI</td>
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<td>Didier GONZE, Geneviève DUPONT and Jean-Christophe LELOUPI</td>
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<td>CHIM-F423</td>
<td>Photochimie des composés organiques, inorganiques et organométalliques</td>
<td>Cécile MOUCHERON</td>
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<td>CHIM-F425</td>
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<td>Chimie et catalyse organométalliques</td>
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<td>Synthèse de biomolécules et introduction à la chimie médicinale</td>
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<td>Yannick DE DECKER</td>
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Ce cours ne sera pas donné en 2021-2022.
Module 4: Stages académiques obligatoires

Up to 25 credits chosen from the following

- CHIM-F471  Stage de recherche hors ULB  | Ivan JABIN (Coordinator)
  25 credits [work placement: 300h]  □ French

- CHIM-F483  Stage de recherche 1  | Ivan JABIN (Coordinator)
  10 credits [work placement: 120h, cours global: 120h]

- CHIM-F484  Stage de recherche 2  | Ivan JABIN (Coordinator)
  15 credits [work placement: 180h, cours global: 180h]
Bloc 2 | M-CHIMA | MA-CHIM

Tronc commun

MEMO-F531  Mémoire | Michel LUHMER (Coordinator)

30 credits [mfe/tfe: 360h]

Module 1: Stages académiques obligatoires

Up to 25 credits chosen from the following

- **CHIM-F471**  Stage de recherche hors ULB | Ivan JABIN (Coordinator)
  - 25 credits [work placement: 300h]  French

- **CHIM-F483**  Stage de recherche 1 | Ivan JABIN (Coordinator)
  - 10 credits [work placement: 120h, cours global: 120h]

- **CHIM-F484**  Stage de recherche 2 | Ivan JABIN (Coordinator)
  - 15 credits [work placement: 180h, cours global: 180h]

Module 2: Cours à options

5 to 10 credits chosen from the following

One course chosen from the following

- **TEMP-0000**  Cours extérieurs au programme
  - 5 credits  French

- **TEMP-0000**  Cours extérieurs au programme
  - 6 credits  French

- **TEMP-0000**  Cours extérieurs au programme
  - 7 credits  French

- **TEMP-0000**  Cours extérieurs au programme
  - 8 credits  French

- **TEMP-0000**  Cours extérieurs au programme
  - 9 credits  French

- **TEMP-0000**  Cours extérieurs au programme
  - 10 credits  French
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**Bloc 1 | M-CHIMD | MA-CHIM**

**Module 1: Cours de base**

**Four courses chosen from the following**

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<td>Laurence RONGY (Coordinator) and Anne DE WIT</td>
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<td>Stratégies de synthèse organique</td>
<td>Gwilherm EVANO (Coordinator)</td>
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<td>Chimie et structure des macromolécules biologiques</td>
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<td>5 credits</td>
<td>36h</td>
<td>12h</td>
<td>12h</td>
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**Module 2: Enseignements obligatoires**

<table>
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<th>Tutorial Classes</th>
<th>Practical Work</th>
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<tbody>
<tr>
<td>CHIM-F451</td>
<td>Didactique de la chimie</td>
<td>Cécile MOUCHERON (Coordinator)</td>
<td>5 credits</td>
<td>24h</td>
<td>24h</td>
<td></td>
<td>French</td>
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</table>
### Module 3: Cours à option

**Up to ten credits chosen from the following**

- **CHIM-F480**  
  **Préparation au stage en école** | Cécile MOUCHERON (Coordinator)  
  5 credits [work placement: 60h, cours global: 60h] | French

- **CHIM-F481**  
  **Préparation à la pratique enseignante** | Cécile MOUCHERON (Coordinator)  
  5 credits [work placement: 60h, cours global: 60h] | French

### Module 4: Cours à option

**Up to 25 credits chosen from the following**

- **BING-F4007**  
  **Compléments de biochimie et de microbiologie** | Sigrid FLAHAUT (Coordinator) and Nausicaa NORET  
  5 credits [lecture: 48h, practical work: 12h] | French

- **CHIM-F4001**  
  **Rational drug design and PKPD modeling** | Martine PREVOST (Coordinator) and Jean-Christophe LELOUP  
  5 credits [lecture: 36h, tutorial classes: 24h] | English

- **CHIM-F401**  
  **Structures, symétries et dynamique quantique** | Emilie CAUET (Coordinator) and Nathalie VAECK  
  5 credits [lecture: 48h] | French

- **CHIM-F402**  
  **Catalyse** | Thierry VISART DE BOCARME (Coordinator)  
  5 credits [lecture: 36h, tutorial classes: 12h] | French

- **CHIM-F405**  
  **Photophysique des atmosphères et des milieux interstellaires** | Nathalie VAECK (Coordinator) and Lieven CLARISSE  
  5 credits [lecture: 36h, practical work: 24h] | French

- **CHIM-F407**  
  **Dynamiques non linéaires et instabilités de non-équilibre** | Anne DE WIT (Coordinator) and Laurence RONGY  
  5 credits [lecture: 36h, practical work: 12h] | French

- **CHIM-F415**  
  **Electrochimie : Concepts, Techniques et Applications** | Thomas DONEUX (Coordinator) and Jon USTARROZ TROYANO  
  5 credits [lecture: 36h, tutorial classes: 12h] | French

- **CHIM-F418**  
  **Chimie supramoléculaire - Récepteurs moléculaires synthétiques** | Ivan JABIN (Coordinator) and Michel LUHMER  
  5 credits [lecture: 36h, practical work: 12h] | French

- **CHIM-F419**  
  **Chimie physique des milieux dilués** | Jean VANDER AUWERA (Coordinator)  
  5 credits [lecture: 36h, tutorial classes: 12h] | French

  *Ce cours ne sera pas donné en 2021-2022.*

- **CHIM-F422**  
  **Modélisation des rythmes du vivant** | Didier GONZE (Coordinator), Geneviève DUPONT and Jean-Christophe LELOUP  
  5 credits [lecture: 36h, tutorial classes: 12h] | French

- **CHIM-F423**  
  **Photochimie des composés organiques, inorganiques et organométalliques** | Cécile MOUCHERON (Coordinator)  
  5 credits [lecture: 36h, tutorial classes: 12h] | French

- **CHIM-F425**  
  **Plasma chemistry and physics** | François RENIERS (Coordinator)  
  5 credits [lecture: 24h, tutorial classes: 12h] | French
<table>
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<tr>
<th>Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CHIM-F430</td>
<td>Chimie et catalyse organométalliques</td>
<td>Gwilherm EVANO (Coordinator)</td>
<td>5</td>
<td>42h</td>
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<td>French</td>
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<tr>
<td>CHIM-F433</td>
<td>Interactions supramoléculaires</td>
<td>Yves GEERTS (Coordinator)</td>
<td>5</td>
<td>24h</td>
<td>24h</td>
<td>French</td>
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<tr>
<td>CHIM-F434</td>
<td>Synthèse de biomolécules et introduction à la chimie médicinale</td>
<td>Gwilherm EVANO (Coordinator)</td>
<td>5</td>
<td>36h</td>
<td>12h</td>
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<tr>
<td>CHIM-F438</td>
<td>Surface analysis of materials</td>
<td>François RENIERS (Coordinator) and Herman TERRYN</td>
<td>5</td>
<td>24h</td>
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<td>CHIM-F440</td>
<td>Spectroscopie et modélisation des protéines</td>
<td>Erik GOORMAGHTIGH (Coordinator) and Martine PREVOST</td>
<td>5</td>
<td>36h</td>
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<td>Michel LUHMER (Coordinator)</td>
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<td>CHIM-F460</td>
<td>Cinétique et thermodynamique stochastiques</td>
<td>Yannick DE DECKER (Coordinator)</td>
<td>5</td>
<td>36h</td>
<td>12h</td>
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<tr>
<td>ENVI-F451</td>
<td>Télédétection de l'environnement et transfert radiatif</td>
<td>Pierre-François COHEUR (Coordinator)</td>
<td>5</td>
<td>36h</td>
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<td>French</td>
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<tr>
<td>ENVI-F526</td>
<td>Sciences de l'atmosphère et changements climatiques</td>
<td>Pierre-François COHEUR (Coordinator) and Cathy CLERBAUX</td>
<td>5</td>
<td>36h</td>
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<tr>
<td>ENVI-F527</td>
<td>Matière et énergie dans l'environnement: analyse, transport et instabilités</td>
<td>Francois FRIPiat (Coordinator) and Anne DE WIT</td>
<td>5</td>
<td>36h</td>
<td>24h</td>
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<td>TEMP-0000</td>
<td>Cours extérieurs au programme</td>
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</table>
**Bloc 2 | M-CHIMD | MA-CHIM**

**Tronc commun**

MEMO-F532  
Mémoire | Michel LUHMER (Coordinator)  
30 credits [mfe/tfe: 360h]

**Module 1: Cours de base**

- **Chimie des polymères** | Yves GEERTS (Coordinator)  
  5 credits [lecture: 36h, tutorial classes: 12h, practical work: 12h]  
  French

- **Chimie physique macroscopique: de l'auto-assemblage à l'auto-organisation** | Laurence RONGY (Coordinator) and Anne DE WIT  
  5 credits [lecture: 36h, tutorial classes: 24h]  
  French

- **Stratégies de synthèse organique** | Gwilherm EVANO (Coordinator)  
  5 credits [lecture: 36h, practical work: 24h]  
  French

- **Approches computationnelles des états de la matière** | Nathalie VAECK (Coordinator), Emilie CAUET and Martine PREVOST  
  5 credits [lecture: 36h, practical work: 24h]  
  French

- **Chimie et structure des macromolécules biologiques** | Vincent RAUSSENS (Coordinator), Cédric GOVAERTS and Fabrice HOMBLE  
  5 credits [lecture: 36h, tutorial classes: 24h]  
  French

- **Chimie des interfaces et nanostructures** | Thomas DONEUX (Coordinator), François RENIERS, Jon USTARROZ TROYANO and Thierry VISART DE BOCARME  
  5 credits [lecture: 36h, practical work: 24h]  
  French

- **Chimie de l'environnement et risques chimiques** | Pierre-François COHEUR (Coordinator) and Laurence RONGY  
  5 credits [lecture: 36h, tutorial classes: 12h, practical work: 12h]  
  French

**Module 2: Enseignements obligatoires**

- **Stages et pratique réflexive II** | Cécile MOUCHERON (Coordinator)  
  10 credits [seminars: 12h, work placement: 108h, cours global: 120h]  
  French

- **Aspects socio-historiques, psychologiques, culturels, éthiques et de neutralité de l'enseignement** | Jose-Luis WOLFS (Coordinator), Philippe VIENNE and Pascal VREBOS  
  5 credits [lecture: 60h]  
  French

**Module 3: Cours à option**

- **Cours extérieurs au programme**  
  5 credits  
  French
One fundamental goal of the Master in Chemistry is to give students a deep understanding of the basic concepts used in chemical sciences, and how they interact. The programme places emphasis on teaching autonomy, with personal projects and a Master’s dissertation to be defended at the end of the second year.

The curriculum includes both theoretical and practical teachings. Six series of lectures must be chosen amongst the seven following:

- Polymer chemistry
- Macroscopic physical chemistry: from self-assembling to self-organisation
- Strategies for organic synthesis
- Computational approaches to the states of matter
- Chemistry of interfaces and nanostructures
- Chemistry and structure of biological macromolecules
- Environmental chemistry and chemical risks.

Students also choose a number of elective courses in a field of interest, and complete a research-oriented dissertation in the second year, working within one of the department’s research units.

**Bloc 1 | M-CHIMS | MA-CHIM**

**Module 1: Cours de base**

*Six courses chosen from the following*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Coordinator(s)</th>
<th>Credits</th>
<th>Lecture</th>
<th>Tutorial Classes</th>
<th>Practical Work</th>
<th>Language</th>
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<tbody>
<tr>
<td>CHIM-F406</td>
<td>Chimie des polymères</td>
<td>Yves GEERTS (Coordinator)</td>
<td>5</td>
<td>36h</td>
<td>12h</td>
<td>12h</td>
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<tr>
<td>CHIM-F408</td>
<td>Chimie physique macroscopique: de l'auto-assemblage à l'auto-organisation</td>
<td>Laurence RONGY (Coordinator) and Anne DE WIT</td>
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<td>CHIM-F436</td>
<td>Stratégies de synthèse organique</td>
<td>Gwilherm EVANO (Coordinator)</td>
<td>5</td>
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<td>CHIM-F443</td>
<td>Approches computationnelles des états de la matière</td>
<td>Nathalie VAECK (Coordinator), Emilie CAUET and Martine PREVOST</td>
<td>5</td>
<td>36h</td>
<td>24h</td>
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<td>French</td>
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<tr>
<td>CHIM-F466</td>
<td>Chimie et structure des macromolécules biologiques</td>
<td>Vincent RAUSSENS (Coordinator), Cédric GOVAERTS and Fabrice HOMBLE</td>
<td>5</td>
<td>36h</td>
<td>24h</td>
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<td>French</td>
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<tr>
<td>CHIM-F467</td>
<td>Chimie des interfaces et nanostructures</td>
<td>Thomas DONEUX (Coordinator), François RENIERS, Jon USTARROZ TROYANO and Thierry VISART DE BOCARME</td>
<td>5</td>
<td>36h</td>
<td>24h</td>
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<tr>
<td>CHIM-F474</td>
<td>Chimie de l’environnement et risques chimiques</td>
<td>Pierre-François COHEUR (Coordinator) and Laurence RONGY</td>
<td>5</td>
<td>36h</td>
<td>12h</td>
<td>12h</td>
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**Module 2: Cours obligatoire**

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<tr>
<th>Course Code</th>
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<th>Coordinator(s)</th>
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<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHIM-F417</td>
<td>L'industrie chimique</td>
<td>Jean-Paul LECOMTE (Coordinator) and David PIERRE</td>
<td>5</td>
<td>24h</td>
<td>24h</td>
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<td>French</td>
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</tbody>
</table>
Module 3: Stage industriel obligatoire

One course chosen from the following

CHIM-F462  Stages  | Ivan JABIN (Coordinator)
            15 credits [work placement: 180h]  French
CHIM-F462  Stages  | Ivan JABIN (Coordinator)
            25 credits [work placement: 300h]  French

Module 4: Cours à option

Up to ten credits chosen from the following

CHIM-H314  Introduction au génie des procédés  | Benoît HAUT (Coordinator)
            5 credits [lecture: 24h, tutorial classes: 24h, practical work: 12h]  French
DROI-CS169  Sciences forensiques  | Anne LERICHE (Coordinator)
            5 credits [lecture: 24h]  French
GEST-H501  Logistics and quality Engineering  | Allassane Ballé NDIAYE (Coordinator)
            5 credits [lecture: 24h, tutorial classes: 24h]  English
GEST-S307  Theory of innovation and entrepreneurship (Solvay Chair of Innovation)  | Bruno VAN POTTELSBERGHE (Coordinator) and Olivier WITMEUR
            5 credits [lecture: 24h, practical work: 24h]  English

Groupe de cours 1

One course chosen from the following

GEST-S101  Comptabilité financière  | Faska KHROUZ (Coordinator)
            5 credits [lecture: 36h, tutorial classes: 8h]  French
GEST-S445  Marketing management  | Catherine JANSSEN (Coordinator)
            5 credits [lecture: 24h]  French

Groupe de cours 2

One course chosen from the following

DROI-CS124  Droits d’auteur et droits voisins  | Carine DOUTRELEPONT (Coordinator)
            5 credits [lecture: 24h]  French
DROI-CS126  Droit des inventions et du design  | Andrée PUTTEMANS (Coordinator)
            5 credits [lecture: 24h]  French

Cours dispensé un an sur deux, sera dispensé en 2020-2021
Module 5 : Cours à option

15 to 30 credits chosen from the following

- **BING-F4007** Compléments de biochimie et de microbiologie | Sigrid FLAHAUT (Coordinator) and Nausicca NORET
  - 5 credits [lecture: 48h, practical work: 12h]  
  - French

- **CHIM-F4001** Rational drug design and PKPD modeling | Martine PREVOST (Coordinator) and Jean-Christophe LELOUP
  - 5 credits [lecture: 36h, tutorial classes: 24h]  
  - English

- **CHIM-F401** Structures, symétries et dynamique quantique | Emilie CAUET (Coordinator) and Nathalie VAECK
  - 5 credits [lecture: 48h]  
  - French

- **CHIM-F402** Catalyse | Thierry VISART DE BOCARME (Coordinator)
  - 5 credits [lecture: 36h, tutorial classes: 12h]  
  - French

- **CHIM-F405** Photophysique des atmosphères et des milieux interstellaires | Nathalie VAECK (Coordinator) and Lieven CLARISSE
  - 5 credits [lecture: 36h, practical work: 24h]  
  - French

- **CHIM-F407** Dynamiques non linéaires et instabilités de non-équilibre | Anne DE WIT (Coordinator) and Laurence RONGY
  - 5 credits [lecture: 36h, practical work: 12h]  
  - French

- **CHIM-F415** Electrochimie : Concepts, Techniques et Applications | Thomas DONEUX (Coordinator) and Jon USTARROZ TROYANO
  - 5 credits [lecture: 36h, tutorial classes: 12h]  
  - French

- **CHIM-F418** Chimie supramoléculaire - Récepteurs moléculaires synthétiques | Ivan JABIN (Coordinator) and Michel LUHMER
  - 5 credits [lecture: 36h, practical work: 12h]  
  - French

**CHIM-F419** Chimie physique des milieux dilués | Jean VANDER AUWERA (Coordinator)
  - 5 credits [lecture: 36h, tutorial classes: 12h]  
  - French
  
  *Ce cours ne sera pas donné en 2021-2022.*

- **CHIM-F422** Modélisation des rythmes du vivant | Didier GONZE (Coordinator), Geneviève DUPONT and Jean-Christophe LELOUP
  - 5 credits [lecture: 36h, tutorial classes: 24h]  
  - French

- **CHIM-F423** Photochimie des composés organiques, inorganiques et organométalliques | Cécile MOUCHERON (Coordinator)
  - 5 credits [lecture: 36h, tutorial classes: 12h]  
  - French

- **CHIM-F425** Plasma chemistry and physics | François RENIERS (Coordinator)
  - 5 credits [lecture: 24h, tutorial classes: 12h]  
  - French

- **CHIM-F430** Chimie et catalyse organométalliques | Gwilherm EVANO (Coordinator)
  - 5 credits [lecture: 42h, tutorial classes: 6h]  
  - French

- **CHIM-F433** Interactions supramoléculaires | Yves GEERTS (Coordinator)
  - 5 credits [lecture: 24h, tutorial classes: 24h]  
  - French

- **CHIM-F434** Synthèse de biomolécules et introduction à la chimie médicinale | Gwilherm EVANO (Coordinator)
  - 5 credits [lecture: 36h, tutorial classes: 12h]  
  - French

- **CHIM-F438** Surface analysis of materials | François RENIERS (Coordinator) and Herman TERRYN
  - 5 credits [lecture: 24h, tutorial classes: 12h]  
  - English

- **CHIM-F440** Spectroscopy and modelling des protéines | Erik GOORMAGHTIGH (Coordinator) and Martine PREVOST
  - 5 credits [lecture: 36h, tutorial classes: 24h]  
  - French

- **CHIM-F457** Résonance magnétique nucléaire | Michel LUHMER (Coordinator)
  - 5 credits [lecture: 36h, tutorial classes: 12h]  
  - French

- **CHIM-F460** Cinétique et thermodynamique stochastiques | Yannick DE DECKER (Coordinator)
  - 5 credits [lecture: 36h, tutorial classes: 12h]  
  - French

- **ENVI-F451** Télédétection de l'environnement et transfert radiatif | Pierre-François COHEUR (Coordinator)
  - 5 credits [lecture: 36h]  
  - French
<table>
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</thead>
<tbody>
<tr>
<td>ENVI-F526</td>
<td>Sciences de l'atmosphère et changements climatiques</td>
<td>Pierre-François COHEUR (Coordinator) and Cathy CLERBAUX</td>
<td>5</td>
<td>French</td>
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<tr>
<td>ENVI-F527</td>
<td>Matière et énergie dans l'environnement: analyse, transport et instabilités</td>
<td>Francois FRIPIAT (Coordinator) and Anne DE WIT</td>
<td>5 (lecture: 36h, practical work: 24h)</td>
<td>French</td>
</tr>
<tr>
<td>TEMP-0000</td>
<td>Cours extérieurs au programme</td>
<td></td>
<td>5</td>
<td>French</td>
</tr>
</tbody>
</table>
Bloc 2 | M-CHIMS | MA-CHIM

Tronc commun

MEMO-F533

Mémoire | Michel LUHMER (Coordinator)

30 credits [mfe/tfe: 360h]

Module 1: Cours obligatoire

CHIM-F417

L'industrie chimique | Jean-Paul LECOMTE (Coordinator) and David PIERRE

5 credits [lecture: 24h, tutorial classes: 24h]  French

Module 2 :Stage industriel obligatoire (si non suivi en bloc 1)

15 to 25 credits chosen from the following

One course chosen from the following

CHIM-F462

Stages | Ivan JABIN (Coordinator)

15 credits [work placement: 180h]  French

CHIM-F462

Stages | Ivan JABIN (Coordinator)

25 credits [work placement: 300h]  French

Module 3: Cours à option

A total of ten credits chosen from the following

CHIM-H314

Introduction au génie des procédés | Benoît HAUT (Coordinator)

5 credits [lecture: 24h, tutorial classes: 24h, practical work: 12h]  French

DROI-CS169

Sciences forensiques | Anne LERICHE (Coordinator)

5 credits [lecture: 24h]  French

GEST-H501

Logistics and quality Engineering | Alassane Ballé NDIAYE (Coordinator)

5 credits [lecture: 24h, tutorial classes: 24h]  English

GEST-S307

Theory of innovation and entrepreneurship (Solvay Chair of Innovation) | Bruno VAN POTTELSBERGHE (Coordinator) and Olivier WITMEUR

5 credits [lecture: 24h, practical work: 24h]  English
Groupe de cours 1

One course chosen from the following

GEST-S101  Comptabilité financière | Faska KHROUZ (Coordinator)
© 5 credits [lecture: 36h, tutorial classes: 8h]  ☑ French

GEST-S445  Marketing management | Catherine JANSEN (Coordinator)
© 5 credits [lecture: 24h]  ☑ French

Groupe de cours 2

One course chosen from the following

DROI-C5124  Droits d’auteur et droits voisins | Carine DOUTRELEPONT (Coordinator)
© 5 credits [lecture: 24h]  ☑ French

DROI-C5126  Droit des inventions et du design | Andrée PUTTEMANS (Coordinator)
© 5 credits [lecture: 24h]  ☑ French
cours dispensé un an sur deux, sera dispensé en 2020-2021

TEMP-0000  Cours extérieurs au programme
© 5 credits  ☑ French