CPE LYON

LIVE AND DISCOVER

CPE LYON

CHEMISTRY AND CHEMICAL ENGINEERING
DIGITAL SCIENCE

www.cpe.fr

établissement associé UNIVERSITÉ DE LYON

SUMMARY:

PRESENTATION OF THE SCHOOL

WHO ARE WE?

- A French “École d’ingénieurs” in Chemistry and Digital Sciences

- CPE Lyon stands for “Ecole Supérieure de Chimie Physique Electronique Lyon”

- CPE Lyon is the result of the merger in 1994 of two historical local chemical industry institutes: ESCIL (founded in 1883) and ICPI Lyon (founded in 1919)

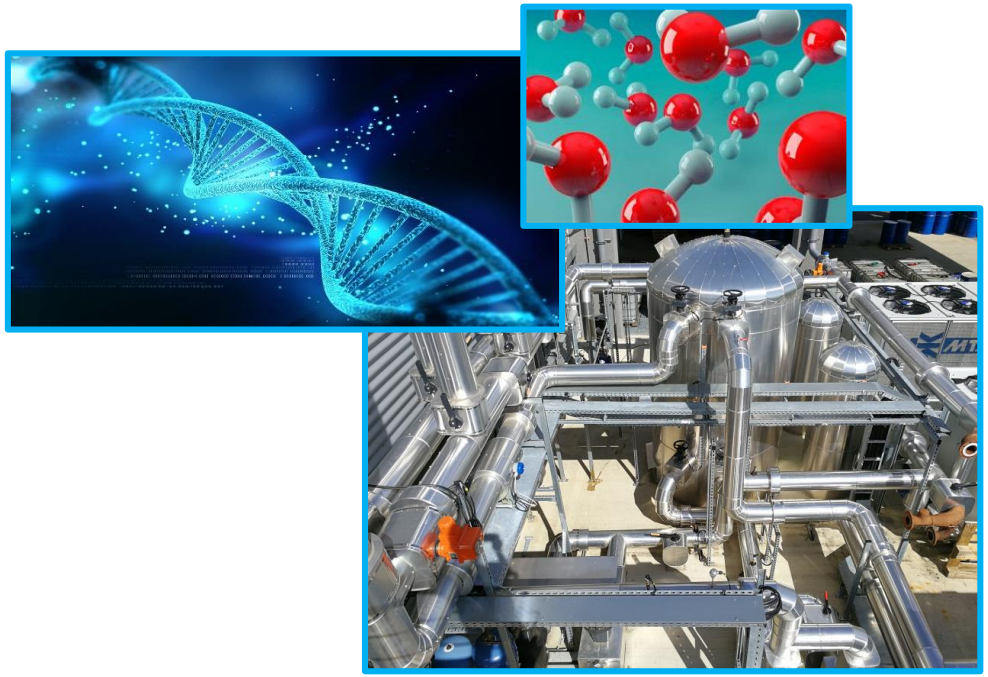
WHAT IS CPE LYON?

CPE Lyon is one of the 230 French « Grandes Écoles »

- ✓ An « École d'Ingénieurs » according to the French Higher Education system (accredited)
- ✓ Selective « School », member of the « Université of Lyon » - the largest federal university in France
- ✓ Student selection on the basis of scientific performance (based on academic records or qualification and interview)
- ✓ Integrated Master of Science and Engineering program, including business/language skills, values, etc.
- ✓ Strong links with the national research and education system

2 STUDY DEPARTMENTS

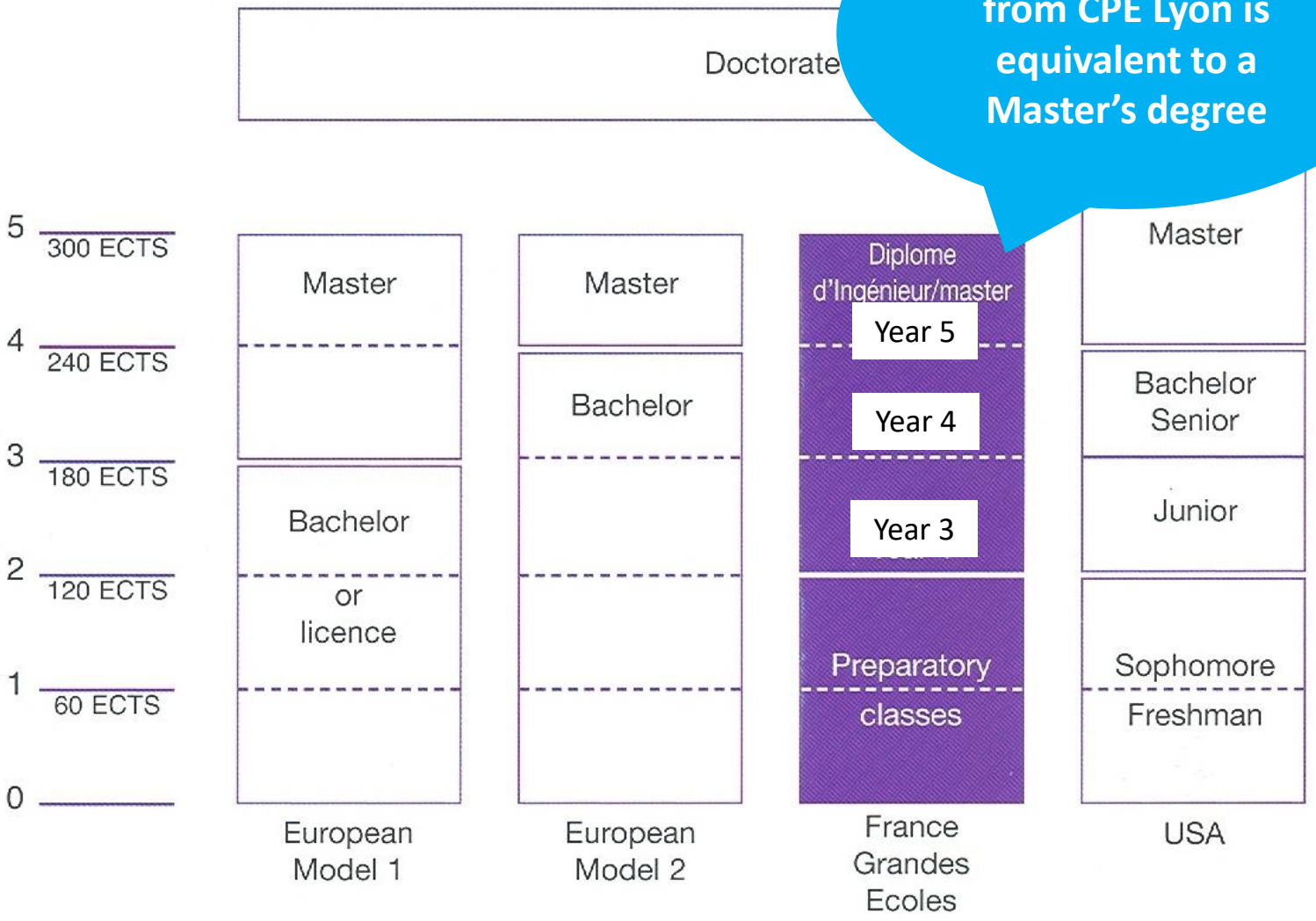
Chemistry & Chemical Engineering



Digital Sciences & Smart Systems

FRENCH STUDIES SYSTEM

Engineering diploma from CPE Lyon is equivalent to a Master's degree



ECTS : European Credit Transfer System
1 year of study = 60 ECTS

STUDENTS: KEY FIGURES

1,300 Students in CPE Lyon

340 engineers (MSc degree) graduate per year

8,500 graduates working in **200** companies all around the world

TRAINING PROGRAMS

5 MSc Degree programs:

CHEMISTRY – CHEMICAL ENGINEERING

ELECTRONICS – TELECOMMUNICATIONS – COMPUTER SCIENCE

INDUSTRY CHEMICAL ENGINEERING

Apprenticeship

COMPUTER SCIENCE AND COMMUNICATION NETWORKS

Apprenticeship

COMPUTER SCIENCE AND CYBERSECURITY

Apprenticeship

* **PHYSICS AND MICROELECTRONIC SYSTEMS** (APPRENTICESHIP) new diploma starting September 2023!

RESEARCH ACTIVITIES AT CPE LYON

CPE LYON HAS RESEARCHERS IN LABORATORIES CO-OWNED WITH:
CNRS, University Claude Bernard, École Centrale Lyon, INSA Lyon

6 TEACHING AND RESEARCH FIELDS:

- Medicinal chemistry
- Polymer science
- Chemical engineering
- IoT
- Computer science
- Process engineering
- Robotics & IA

RESEARCH ACTIVITIES AT CPE LYON

LABORATORIES IN WHICH CPE LYON IS INVOLVED

CHEMISTRY
CHEMICAL ENGINEERING

Institute for Molecular and Supramolecular Chemistry and Biochemistry
www.icbms.fr

laboratory of Catalysis, Polymerisation, Process and Materials
www.cp2m.org

Laboratory of Automatic Control and Chemical Engineering
lagepp.univ-lyon1.fr/en/home

DIGITAL SCIENCES

LIP Computer Science Lab
www.ens-lyon.fr/LIP/

Laboratory of Image Informatics and Information Systems
liris.cnrs.fr/en

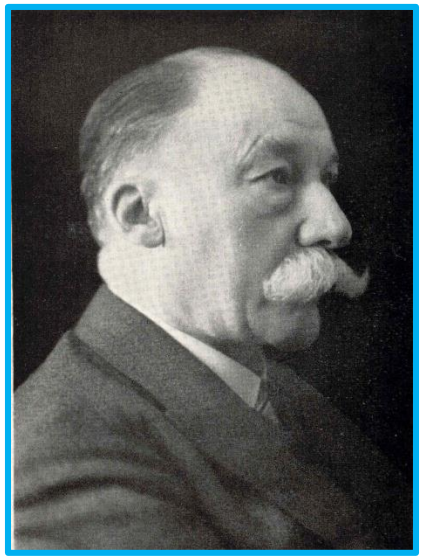
Center of innovation in telecommunications and integration of service
www.citi-lab.fr

Optics, photonics and surfaces and Computer Science, Security, Image
laboratoirehubertcurien.univ-st-etienne.fr/en/index.html

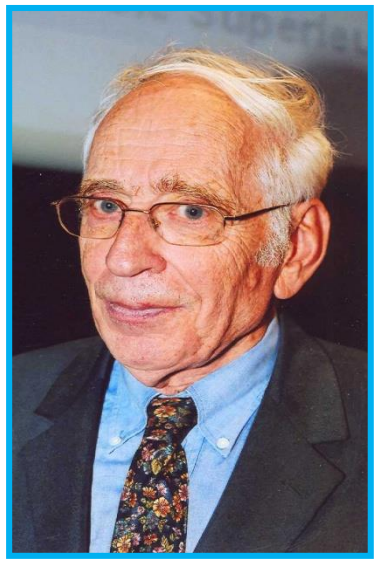
Center for research into the acquisition and processing of images for healthcare
www.creatis.insa-lyon.fr/site7/en

The Lyon Institute of Nanotechnology
inl.cnrs.fr/en/about-inl/

THREE « NOBEL PRIZES » AT CPE LYON



Victor GRIGNARD
Nobel Prize in Chemistry, 1912
Director of CPE Lyon-ESCIL 1921 -1935



Yves CHAUVIN
Nobel Prize in Chemistry, 2005
Graduate of CPE Lyon-ESCIL 1954, researcher at C2P2 laboratory

Jean JOUZEL
Nobel Peace Prize co-laureate, 2007
(with Al Gore)
Graduate of CPE Lyon-ESCIL 1968 and Vice-President IPCC/UNO

PRESENTATION
CHEMISTRY – CHEMICAL ENGINEERING PROGRAM

STRENGHTS OF THE PROGRAM

- **STUDENTS WITH A WELL-ROUNDED BACKGROUNG**

…Through a complete and general training program in chemistry, chemical engineering and processes during the first 3 semesters.

- **STUDENTS WITH VARIOUS PROFILES AND SPECIALIZATIONS**

…Through the selection of scientific modules and the choice of a specialization for the last year of study (Chemistry and processes applied to the environment – formulation, implementation of dispersed solids – Process engineering – Life sciences and health).

- **STUDENTS WITH HANDS ON PRATICE AND EXPERIENCE**

…As they have up to 12 hours of practical work per week and have to complete internships every year. Possibility to do a gap year to complete a internship or professional experience of 6 to 12 months abroad.

- **STUDENTS WITH AN INTERNATIONAL MINDSET**

…As they have to study 2 foreign languages, must have at least a B2 level (professional work proficiency) in English and must spend at least 3 months abroad.

- **STUDENTS WITH A COMPLETE SET OF SOFT SKILLS**

…Thanks to their classes in economics, social science and their group project, students have great interpersonal, team work, project management and adaptability skills.

RECAP OF THE PROGRAM

Year 3
(3rd year of Bachelor)

- **MAIN CLASSES:**
- Analytical Sciences – Applied Mathematics and Computer Science – Molecular Chemistry – Process Engineering – Physical and Inorganic Chemistry

Year 4
(1st year of master)

- **MAIN CLASSES:**
- Analytical Sciences – Molecular Chemistry – Process Engineering - Physical and Inorganic Chemistry
- **5 SCIENTIFIC MODULES (PRE-SPECIALIZATION) :** students must follow 5 of them among a series of possibilities and fields (organic chemistry, biochemistry, process, materials, formulation, etc.) - details in the next few slides

Gap year (optional)

- **6 TO 12 MONTHS OF PROFESSIONAL EXPERIENCE IN A COMPANY (STARTING FROM JULY)**
- Students can spend one full year in a company or do 2 internships of 6 months in different companies

YEAR 5
(2nd year of master)

- **ONE SPECIALIZATION (SEMESTER 9):**
- Chemistry and Processes applied to the Environment – Formulation, implementation of dispersed solids – Process Engineering – Life Sciences and Health
- Students have the possibility to complete semester 9 in a partner university, in France or abroad
- **END OF STUDIES PROJECT (SEMESTER 10):**
- Internship/work placement of 6 months starting from February

PROGRAM OF COURSE BY SEMESTER

Year 3 (1st year of the engineer curriculum)

semester 5 -30 ECTS

SCIENTIFIC STUDIES (24 ECTS)

Analytical sciences

- Studies of equilibria in solution 3 ECTS
- Molecular spectroscopy (UV, IR, MS and NMR) 6 ECTS

Molecular chemistry

- Organic chemistry 1 6 ECTS

Process engineering

- Transport phenomena: fluid mechanics and dynamics 3 ECTS
- Thermodynamics and heat transfer 3 ECTS

Physical and inorganic chemistry

- Physical chemistry and inorganic chemistry 3 ECTS

SOCIAL SCIENCE AND LANGUAGES (6 ECTS)

Languages (3 ECTS)

- English
- 2nd Language (Spanish, German, Japanese, Chinese, Italian, etc.)

Economic and social science (3 ECTS)

- Economics and geopolitics of contemporary issues

Or

- Economics and ethics of digital technologies

Or

- Economics and understanding the world (from yesterday to tomorrow)

PROGRAM OF COURSE BY SEMESTER

Year 3 (1st year of the engineer curriculum)

semester 6 -30 ECTS

SCIENTIFIC STUDIES (24 ECTS)

Analytical sciences

- Separation techniques, application to biochemical 3 ECTS
- Electrochemistry, corrosion 3 ECTS

Molecular chemistry

- Organic chemistry 2, biology and biochemistry 6 ECTS

Process engineering

- Heat and mass transfer 3 ECTS

Physical and inorganic chemistry

- Quantum Mechanics and theoretical chemistry 3 ECTS
- Coordination chemistry and organometallic chemistry 3 ECTS

Applied mathematics and computer science

- Mathematics, statistics and computer science 3 ECTS

SOCIAL SCIENCE AND LANGUAGES (6 ECTS)

Languages (3 ECTS)

- English
- 2nd Language (Spanish, German, Japanese, Chinese, Italian, etc.)

Economic and social science (3 ECTS)

- Entrepreneurship project

PROGRAM OF COURSE BY SEMESTER

Year 4 (2nd year of the engineer curriculum / 1st year master's degree)

semester 7 -30 ECTS

SCIENTIFIC STUDIES (24 ECTS)

Analytical sciences

- Atomic spectroscopy methods — 3 ECTS

Molecular chemistry

- Organic chemistry 3, biochemistry — 6 ECTS
- Polymers — 3 ECTS

Process engineering

- Chemical kinetics, catalysis and ideal reactors — 6 ECTS
- Processes involved in the production of solids — 3 ECTS

1st serie of Scientific Module (one option to choose) — 3 ECTS

- Thermodynamics properties for industry

Or

- Analytical strategies

Or

- Advanced Organic chemistry and stereochemistry

SOCIAL SCIENCE AND LANGUAGES (6 ECTS)

Languages (3 ECTS)

- English
- 2nd Language (Spanish, German, Japanese, Chinese, Italian, etc.)

Economic and social science (3 ECTS)

- Management

PROGRAM OF COURSE BY SEMESTER

Year 4 (2nd year of the engineer curriculum / 1st year master's degree)

semester 8 -30 ECTS

SCIENTIFIC STUDIES (27 ECTS)

Process engineering

- Process safety and process industrialization — 3 ECTS

Physical and inorganic chemistry

- Introduction to formulation, cosmetology — 3 ECTS

Applied mathematics and computer science

- Chemometrics and experimental design — 3 ECTS

Scientific project — 6 ECTS

2nd, 3rd, 4th and 5th series of Scientific Module — 12 ECTS

- one option to choose each time
- description of the next slides

SOCIAL SCIENCE AND LANGUAGES (3 ECTS)

Languages (3 ECTS)

- English
- 2nd Language (Spanish, German, Japanese, Chinese, Italian, etc.)

PROGRAM OF COURSE BY SEMESTER

Year 4 (2nd year of the engineer curriculum / 1st year master's degree)

semester 8 -30 ECTS

PRESENTATION OF SCIENTIFIC MODULES (SERIES 2 AND 3)

Series 2

- Advanced NMR and MS
- Introduction to Biotechnologies and bioprocesses
- Macromolecular engineering for polymer materials
- Advanced chemical reaction engineering
- Stationary simulation of processes
- Organic synthesis strategies
- Organometallic chemistry, orbital approach

Series 3

- Online analysis
- Transition to renewable energy
- Macromolecular synthesis
- Medicinal chemistry and heterocycles
- Advanced chemical reaction engineering

PROGRAM OF COURSE BY SEMESTER

Year 4 (2nd year of the engineer curriculum / 1st year master's degree)

semester 8 -30 ECTS

PRESENTATION OF SCIENTIFIC MODULES (SERIES 4 AND 5)

Series 4

- Technological innovation and entrepreneurship
- Chemistry and digital
- From the molecule to nanomaterials
- Nuclear chemistry, measurement, analysis
- Synthesis of bioactive molecules
- Microbiology – immunology – elements of genetics engineering

Series 5

- Catalysis and sustainable development
- Applications of spectroscopic methods to organic synthesis
- Advanced separative methods and speciation
- Design and implementation of drugs
- Numerical methods
- Chemical engineering for polymerization

PROGRAM OF COURSE BY SEMESTER

Year 5 (3rd year of the engineer curriculum / 2nd year master's degree)

semester 9 -30 ECTS

SCIENTIFIC STUDIES (24 ECTS)

Specialization (one to choose) 24 ECTS

- Chemistry and processes applied to the environment
- Formulation, implementation of dispersed solids
- Process engineering
- Life Science and Health

SOCIAL SCIENCE AND LANGUAGES (6 ECTS)

Languages (3 ECTS)

- English
- 2nd Language (Spanish, German, Japanese, Chinese, Italian, etc.)

Economic and social science (3 ECTS)

→ More detailed description of the specialization on the next slides

semester 10 -30 ECTS

• Engineering internship (internship done in year 4 or gap year)	9 ECTS
• Final year project (minimum 24 weeks internship in Year 5)	21 ECTS

PROGRAM OF COURSE BY SEMESTER

Year 5 (3rd year of the engineer curriculum / 2nd year master's degree)

semester 9 -30 ECTS

DESCRIPTION OF SPECIALIZATIONS/MAJORS (1/2)

CHEMISTRY AND PROCESSES APPLIED TO THE ENVIRONMENT

- Environmental management and sustainable development
- Environmental awareness
- Industrial waste
- Depollution processes
- Industrial water effluent and gaseous emissions
- Uses and application of renewable resources

FORMULATION, IMPLEMENTATION OF DISPERSED SOLIDS

- Applied Formulation
- Dispersed media formulation
- Experimental research
- Development of products in the solid form
- Polymers in formulation

PROGRAM OF COURSE BY SEMESTER

Year 5 (3rd year of the engineer curriculum / 2nd year master's degree)

semester 9 -30 ECTS

DESCRIPTION OF SPECIALIZATIONS/MAJORS (2/2)

PROCESSES ENGINEERING

- Polyphasic reactors
- Energy industrial and sustainable development
- Dynamic modelling of the processes
- Bioreactors and separation
- Sustainable industry and process intensification
- Process control

LIFE SCIENCES AND HEALTH

- Cell biology
- Molecular biology and genetic engineering
- Bioprocess engineering
- Enzymology
- Analytical techniques and biological chemistry
- Immunology and diagnostics

PARTNERSHIPS AND PLACEMENTS

PLACEMENT OPPORTUNITIES

YEAR OF STUDY	OBJECTIVE	DURATION	AVAILABILITY	LOCATION
YEAR 3 (3rd year of bachelor's degree)	To discover the organization and mechanisms of the enterprise through a task that is usually entrusted to a blue collar worker or employee	1 month	July or August	In France or Abroad
YEAR 4 (1st year of Master's degree)	Put the pupil's knowledge into practice by working at the level of a "technician"	3 months	Mid June to Mid September	In France or Abroad
GAP YEAR	To acquire professional competencies in scientific and technical areas of the course and an international culture for those doing the placement in another country	6 to 12 months	From Mid June to Mid September of the following year	3 options: • 1 year: abroad • 2*6 months: abroad • 6 months in France and 6 months abroad
YEAR 5 (2nd year of Master's degree)	Application of the course content to the study of a concrete problem by undertaking a mission at the level of a debutant engineer	6 months	From February to July	In France or abroad

Website page: https://www.cpe.fr/en/article/placement-opportunities/

RECRUITMENT PROCESS

SHARING PROFESSIONAL OPPORTUNITIES

The company contacts the international placement office of CPE Lyon for information and/or sends their internship offers

INFORMING STUDENTS

The international placement office advertises them to the students via email and publishes the offer on their career platform

MANAGING THE APPLICATIONS

The company chooses to receive directly the applications by email or through their career website

OR

The international placement office receives the application, do a pre-screening and sends the applications by email to the company

CONDUCTING INTERVIEWS

The company contacts the applicants for interviews and/or tests

SHARING THE OUTCOME

The company and/or the student informs the international placement office of the outcome

GATHERING INFORMATION AND WRITTING CONTRACT OR INTERNSHIP AGREEMENT

In case of positive outcome, the student gathers the information required for the internship. Based on these information, the international placement office writes an internship agreement if needed

CALENDAR AND IMPORTANT DATES

- **Mid-September:** University Year starting
- **From Mid-September to May**: Companies send their offers to the international placement office of CPE
- **February**: 5th year students (2nd year Master's degree) star their 6-month end of study project/internship
- **Mid-June**: University Year ending
- **July 1st (or later):** 4th year student in gap year starting their 6 to 12 months internships or professional experience
- **September 1st**: Latest possibility for starting the gap year professional experience

SAVE THE DATE!

Company & Career Day (November 24)

fair and recruitment session directly at CPE Lyon headquarters

COMPANY PARTNERS WORLDWIDE

COMPANY PARTNERS IN GERMANY, SWITZERLAND AND LUXEMBURG

INTERNATIONAL OFFICE: CONTACTS

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Director of International Relations

Elodie GONNET
Assistant

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INTERNATIONAL WORK PLACEMENTS

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THANK YOU FOR YOUR ATTENTION!