Erasmus Mundus Joint Master Degree

ADVANCED SPECTROSCOPY IN CHEMISTRY

2-Year European Master’s Course in English

The ASC Master program has been awarded the Chemistry Euromaster® Label by the European Chemistry Thematic Network (ECTN) for its degree for the second time in recognition of its excellence!

In the summer of 2019 the Education, Audiovisual, and Culture Executive Agency (EACEA) decided to continue financial support of the next 5 student intakes, starting in 2020!

High quality education program

The Erasmus Mundus Joint Master’s Degree in Advanced Spectroscopy in Chemistry (ASC), was established in 2007. It is jointly designed and lead by five European partner universities. These include the University of Lille (the coordinating institution), Leipzig University, Jagiellonian University in Krakow, Alma Mater Studiorum University of Bologna, and University of Helsinki. ASC is a two-year (4 semesters, 30 European Credit Transfer System/ECTS each) Master program including mobility periods within the ASC network. European Commission funding provides student scholarships of 1000 euros per month, including a living allowance. It covers tuition fees, travel costs for 4 selected European students, and 14 non-European students on average.

Since it first opened, 222 students from 51 countries have enrolled in the course. Partner universities offer modern equipment and expertise covering applications of spectroscopic techniques to chemistry in a broad sense (e.g. material sciences, environmental and atmospheric sciences, biomedical and health sciences). Mobility within this network prepares students to become experts and develop intercultural skills towards doctoral studies, and/or professional industrial careers in chemical analysis and characterization of the structure of materials in the fields of molecular synthesis, biology, nanotechnologies, modeling, pharmacy, green chemistry, materials, and sustainable energies. Quality of the academic content and teaching, expertise in the management of the ASC program and the involvement of the industrial partnership ensures the employability of ASC students. The ASC Network includes 22 associated partners. Among these associated partners are industrial partners like major producers of spectrometers (Bruker and Magnetech), regional competitiveness clusters (MATIKEM in France, NEU in Germany, VTT and LUKE in Finland) and synchrotron research facilities (SOLEIL in France, ELETTRA in Italy, and SOLARIS in Poland).
Targeted skills

ASC graduates
- have a standard of knowledge and competence, which give them access to the third cycle course or PhD programs;
- are experts in chemical analysis, structural characterization, characterization of fast reactions, in situ spectroscopy, imaging;
- are well prepared for R&D careers in industry or in public research institutes;
- develop high-level skills in project management, intercultural communication, and are at least bilingual.

Job opportunities

L’Oréal Paris, numerous R&D units, Merck KGaA, Millipore, Paris and Shanghai, Darmstadt, Reckitt Benckiser, Hull, and many other places chose to hire the ASC students either directly after their Master or PhD studies. Nearly 80% of the ASC graduates have started their PhD mainly in European universities, 20% are working in their home country, 60% are in industry, and 40% are in higher education.

Strengths of training

- The ASC master is supported by the European Commission Socrates programme (Erasmus Mundus Joint Master Degree) and has been awarded the Chemistry Euromaster* Label by the European Chemistry Thematic Network (ECTN);
- The ASC master has developed a network of global industrial partners, competitiveness clusters, and research institutes;
- The ASC master provides skills not only towards doctoral studies, but also towards professional activity in industry;
- Mobility within the network is spread amongst 5 countries in Europe;
- Training is performed using high-level modern equipment and professional supervision;
- Graduates are awarded degree from each partner university where they have spent at least one semester (30 ECTS credits);
- Erasmus Mundus student scholarship.
Organization of training

The ASC Master is a 2-year Master’s course comprising 120 ECTS credits in total.

- Three semesters of 30 credits each consist of integrated courses. Thus, the first semester in Lille provides all students with a common platform in advanced spectroscopic methods, including magnetic resonance, mass spectrometry, optical spectroscopy, and diffraction techniques. In the second and third semesters, more specialized instruction is provided with applications in molecular synthesis, material sciences, biology, nanotechnologies, modeling, “green chemistry,” and new energy sources. Altogether 10 credits are devoted to transferable skills (internship, bibliographical research, project management, norms and regulations in chemistry).

- One semester for the Master studies (30 credits) is devoted to research in laboratory. The ASC network offers a broad range of opportunities for internships in research laboratories of the ASC universities and associated partners (industry, large scale research facilities, or research institutions). The Master thesis can also be based on a collaborative project between two institutions.

- In addition, winter schools are organized each year in different locations on various topics to deepen one of the specific fields of spectroscopy. This joint social event unites students with teachers and researchers of the ASC institutions as well as introduces them to the industrial partners and ASC alumni.

Admission criteria

Candidates should hold:

- European Bachelor of Science or of equivalent education in the field of chemistry, biochemistry, physical chemistry, or physics;
- Relevant theoretical knowledge in chemistry or related professional experience;
- Excellent academic records;
- Good and certified English skills;
- Strong interest in spectroscopic techniques and their wide range of applications;
- Motivation to study in a multicultural environment in at least two European universities;

Applications are submitted via the ASC portal: [www.master-asc.org](http://www.master-asc.org).

Deadlines: March 01, 2020 for admission to the program and Erasmus Mundus scholarship. The second round of applications (no scholarships available) opens March 02 to May 31, 2020. The course starts in September in Lille.

Contact: representatives of the ASC program at the Department of Chemistry:

Sirkka Liisa Maunu
Leena Kaisalo
Markku Vainio
Vladimir Aseyev
As a fresh alumnus of ASC, who had the chance to continue her PhD studies at the University of Helsinki, ASC has been the most life-defining choice I have ever made. I had the opportunity to study at two different universities across Europe and to meet people who come from all over the world who become my closest friends. It is an experience that influenced all of our lives in all possible aspects.

I spent the first year of the program at the University of Lille, France. During that year, I got to experience not only the culture of France but also the culture of every single person with whom I now share my daily life. My generation of ASC students came from 13 different countries!

When choosing the partner University to spend the second year of the Master’s, the University of Helsinki was a no brainer for me. The curriculum that was offered at this University was incredibly broad, so that you were given the option in expanding your knowledge in any direction you wanted. Another deciding factor for me to come to the University of Helsinki was experiencing the Finnish culture. I was interested in experiencing the cold winters, traveling north and seeing the northern lights, having constant access to saunas, and living in a country named the happiest in the world. The past year of my life has been one of the best experiences that a person can ask for.

The courses that I have taken and especially the project I completed for my thesis have truly made me into a better chemist. They have helped me to be more confident in my own knowledge and in the way of perceiving things. I had the opportunity to be a part of the Biomolecular group at the Department of Chemistry with the mentorship of Doc. PhD. Filip Ekholm. I was included in a project that fit perfectly with my ambitions as a chemist. The mentorship and guidance I received from both my supervisor and my team have had an enormous impact on the progress I made during the past year.

I am incredibly lucky that I get to continue this journey with my PhD studies in the same group. My ASC experience in Finland has been shared with fellow ASC students, as well as other international students that I interacted both within and outside of the University. The memories we created are truly something I will hold dear forever. Applying for this program has been life changing, and in a heartbeat, I would gladly recommend it to anyone.

Jelena Matovic

ASC has been the most life-defining choice I have ever made.

Jelena Matovic, a fresh alumnus of ASC
ASC MASTER STUDIES – FIRSTHAND OPINION

As my bachelor program was coming to its end, I started to both wonder and worry about what I should do next. I studied chemistry in Madrid, and as it happens with other Mediterranean countries, the aftermath of the economic crisis is still palpable, so I considered I would need to differentiate myself from the rest of my colleagues. That idea connected in my mind with a constant desire to travel around and change of scenery, so I started to search for international master’s programs that could fulfill my needs. That is how I came across the Advanced Spectroscopy in Chemistry (ASC) Master’s Course.

After being surprisingly selected, since I humbly did not expect to have such a noteworthy academic background, I arrived in Lille full of excitement. It would be my first time studying abroad and I was unsure what I could expect from it. I would spend at least six months there, alongside nineteen other students from fifteen different nations. We learned basic spectroscopy before half of us decided to leave to Leipzig for the second semester of the program. I decided to stay back in Lille for the whole first year, however, since I already felt comfortable there and the forthcoming courses in France looked much more appealing to me, compared to the biological pathway that the University of Leipzig focuses on.

My next important decision was where I wanted to go to out of the four different universities that jointly operate the program: Krakow, Leipzig, Bologna, or Helsinki. The most interesting choices seemed to be Bologna and Helsinki, and, in fact, I had chosen to go to Italy, but then winter school happened. For those of you who are not aware of it, the winter school is a whole week in which some special courses are arranged to expand our field of knowledge and get to meet the students that have started their mobility programs and those who started studying the master one year before us.

There, I got to discuss my choice with different people that were studying already in Finland – with special mention to Jelena – and they sounded so enthusiastic about the country and the studies that I decided I had to get a taste of that, which I do not regret at all.

Upon my arrival, I was treated like an important guest, which made me feel appreciated in the country. Most people outside of Finland may have the feeling that Finns are not really close and are somewhat shy, but I must say now that it is nothing further from reality. Always with a smile, the professors and local coordinators have always taken care of any necessity I may have had, for which I am grateful. As a matter of fact, one of the local coordinators even accepted me to be part of his lab team working with lasers for my master thesis project, even though I have no previous experience working with them at all.

Regarding the studies, unlike the rest of the cities in the program, Finland does not really have a specific specialization path you have to follow. You can basically build up your own program out of a much broader course selection. Keeping in mind that I was to be working in laser absorption spectroscopy for the fourth semester, I decided to focus on that topic, but never lost track of other useful side-courses that are indeed important in a chemist’s day-to-day, such as a course on separation techniques.

If I had more time, I have no doubt that I would have enjoyed studying some other quite interesting subjects, but unfortunately this two-year program is coming to an end. I cannot express how grateful I feel for being part of this experience and I am glad that at least I managed to convince some people to apply for this program, because I want to help it flourish further as much as I can. It is the least I can do.

Daniel Sinausia Martinez

You can basically build up your own program out of a much broader course selection.

Daniel Sinausia Martinez is a second-year Master Student in the Department of Chemistry.
MY EXPERIENCE IN FINLAND

Since last August, every time I meet someone new I hear the question “But why Finland?” This surprise is quite interesting, because it makes me think about the long and unexpected process that took me to Helsinki.

In 2017 I was in Brazil, my home country, recently graduated in Chemistry from the University of São Paulo and trying to find my place in the job market. Differently from what I thought, the chances of working with the aspects of science that I liked were quite small. A huge economic crisis also made the market very competitive and this scenario of insecurity made me think over possibilities of keeping my professional development. I decided to try for a master’s degree, which would take me back to the academic learning environment, allowing me to explore the field of study that I chose. My goal was to gain more specialized knowledge in my area, in addition to understanding better how I wanted to fit into industry or academia.

Some research led me to apply for the Erasmus Mundus’ program “Advanced Spectroscopy in Chemistry (ASC),” to which I was accepted. The following year I moved to Lille, in France, to start this unique master’s degree. There I completed the fundamental theoretical courses that would allow me to follow different paths concerning spectroscopy techniques and the variety of applications where they are present. When the time to choose where to spend my second year came, I had different subjects in mind that could become the topic of my thesis, but no certainty about which I preferred.

My interests included environmental, organic, and analytical applications, and when researching the courses and research groups available in the different universities I knew the University of Helsinki was one of the best options for me. However, my final decision was made considering the life experiences that would be waiting for me in a Nordic country. I would experience a culture, language, weather, and landscape that was very different from anything I have ever experienced.

Since I arrived in Helsinki, I could not be surer that I made the right choice. The environment is very multicultural, and English is easily used for communicating with almost everybody in the city and the university. The educational system is notably efficient and the way the lectures are structured allowed me to have more time for self-study. The support received from the ASC crew and the professors in the university also grabbed my attention about how simple and informal this contact can be.

Now, I am pursuing a research project that will guide my master’s thesis and I believe I am acquiring skills and theory that will allow me to act in the variety of topics of my interest. I am working in the Department of Analytical Chemistry, on a project that involves many subjects that I enjoy. It joins organic synthesis, extraction of natural products, and liquid chromatography coupled to mass spectrometry, and other spectroscopy techniques are also used in our analysis.

It is rewarding to feel that I found the best opportunity for developing my abilities related to chemistry while gaining so much from a cultural point of view. This experience has changed my life completely and also the way I see my career and my personal life.

Beatriz Gasques Rocha Pinheiro

**Beatriz Gasques Rocha Pinheiro** is a second-year Master Student at the Department of Chemistry.
ASC WINTER SCHOOLS

As part of the ASC curriculum, a one-week Winter School is organized every year. The school takes place in one of the partnered universities and covers a different topic of chemistry regarding spectroscopy. All ASC students have the opportunity to travel to the host University and attend the full week of different lectures and workshops. During this week, students from both the first and the second year of the program are in one place for the first time.

When you are a first-year student, it gives you the opportunity to listen to the experiences people had at different universities, and what is to come in the following year of your life. On the other hand, when you are a second-year student, you have the opportunity to advise and help in any way possible by sharing your experiences. You can motivate other students just by letting them know how many great things are yet to come.

The topics that are covered at Winter School are designed in a way to show us all the wide application spectroscopy has. You have the opportunity to listen to invited lecturers from all over Europe, interact with them, ask as many questions as you want, and truly expand your knowledge. During this week, you not only get to listen to incredible speakers, but you also have the chance to be one!

You get to present your work and share it with fellow ASC students, as well as the professors.

Even though the Winter School is organized by the ASC program, everyone is able to apply and experience it. In 2020, the University of Helsinki hosted the ASC Winter School titled “Spectroscopy in Medical Applications.” It was held from 2–6 March, 2020.

Jelena Matovic

More details: http://www.master-asc.org/program/winter-schools
BEYOND BORDERS, BEYOND EXPECTATIONS

ERASMUS MUNDUS JOINT MASTER DEGREE
ADVANCED SPECTROSCOPY IN CHEMISTRY

• Enjoy a 2-year Master program within our European network of 5 partner universities, including 22 academic, industrial and research associated partners
• Get acquainted with spectroscopic techniques, covering the state-of-art applications in chemistry
• Profit from this transcultural learning experience with openings to PhD careers and/or highly qualified positions in industry all over the world
• Get a joint or multiple Master’s degree

Apply for a European scholarship!
Deadline: March 01, 2020

Admission criteria:
• Eurobachelor in Chemistry or equivalent
• Excellent academic records in chemistry, biochemistry, physical chemistry or physics
• Good and certified English skills

PARTICIPATING UNIVERSITIES

Université de Lille
University of Lille

Jagiellonian University in Krakow

Leipzig University

Alma Mater Studiorum University of Bologna

University of Helsinki

Funded by the Erasmus+ Programme of the European Union

www.master-asc.org

Contacts: Sirkka Liisa Maunu
Leena Kaisalo
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