



LUND
UNIVERSITY

Chemistry, Physical Chemistry

LUND UNIVERSITY | SWEDEN

- Master of Science in Chemistry
- 2 years, full-time, 120 ECTS credits
- Department of Chemistry
- Lund Campus
- Application deadline: January 2024
- Programme start: August 2024

PROGRAMME OVERVIEW

Through the perspective of physical chemistry, you will obtain a deep understanding of fundamental mechanisms at the molecular level. You will investigate chemical phenomena and industrial applications using your knowledge in e.g. quantum mechanics and thermodynamics. The programme prepares you for a career in both academia and industry.

The programme gives you broad and fundamental knowledge in physical and theoretical chemistry and chemical physics. You will develop your laboratory skills and obtain in-depth theoretical knowledge on fundamental, molecular mechanisms as well as a good understanding of practical applications within the environmental field, materials science and catalysis, for example. Special emphasis is placed on creating coherent understanding that stretches from a quantum mechanical description of atoms and molecules to complex supramolecular structures and their industrial and biological applications.

As a student, you will obtain knowledge within thermodynamics, quantum mechanics, spectroscopy and surface and colloid chemistry. You will practice independently planning, conducting and critically evaluating experiments. You will also learn to use scientific literature as well as manage and analyse data in various forms. Teaching takes place on modern premises and in laboratories with advanced equipment. The format of the Master's programme varies and includes lectures, seminars, group exercises, extensive laboratory work, calculation exercises, computer exercises and project work, including oral and written presentations.

The programme has strong ties with research. All of the teaching staff are researchers, and the course content is continuously adapted based on current research. The Department of Chemistry is characterised by a broad spectrum of basic research and applied research, as well as close contact with industry and external research centres. Lund is also home to two unique research facilities – the MAX IV Laboratory and the ESS (European Spallation Source)

neutron source, the latter of which is currently being constructed. The facilities offer applications in many areas of chemistry. The language of instruction is English in the Master's programme.

PROGRAMME STRUCTURE

You can influence and plan your study design to a large extent. During the first semester you will initially take a course on molecular driving forces and chemical bonding, followed by studies in advanced surface and colloid chemistry. In the next semester you will choose among courses on e.g. statistical thermodynamics and molecular simulation, molecular quantum mechanics, magnetic resonance and scattering methods. The spring semester concludes with a course on molecular spectroscopy.

There are several options during the second academic year. The degree project can be worth 30, 45 or 60 credits and is conducted in a research group or at a company. If you decide to do a degree project worth less than the maximum number of credits, you can do a second project. The Master's programme offers the option of doing an internship, which can provide valuable professional contacts during the programme.

PROGRAMME MODULES/COURSES

COURSES AND NUMBER OF CREDITS: The recommended structure for the programme includes the following courses: Molecular driving forces and chemical bonding (15 ECTS), Advanced surface and colloid chemistry (15 ECTS), Molecular quantum mechanics (7.5 ECTS), Statistical thermodynamics and molecular simulation (7.5 ECTS), Molecular spectroscopy – methods and applications (15 ECTS) and at least one master's degree project (30, 45 or 60 ECTS).

COMPULSORY COURSES: Advanced level courses in chemistry comprising 30 ECTS, of which 15 ECTS should be within physical chemistry, theoretical chemistry or chemical physics, and a Master's degree project comprising at least 30 ECTS.

CAREER PROSPECTS

Programme graduates are highly skilled in conducting research and development work within a wide variety of areas such as smart materials, photochemistry, food science and biomolecular design. The Master's programme provides a good foundation for both doctoral studies and a career at research-intensive companies. Half



“The best thing about the programme is that you get to go into more details with everything, both with the theory as well as the laboratory work. The classes are smaller which opens up for good atmospheres for discussions. You also meet international students with different backgrounds, and some courses are taken together with PhD-students. I think this mix is great, and the PhD students will provide a good discussion, often heavily influenced by research.”

Oskar from Sweden





of our Master's students continue to doctoral studies, and half begin working in industry in Sweden or abroad

ENTRY REQUIREMENTS AND HOW TO APPLY

Entry requirements

Bachelor's degree of at least 180 credits or the equivalent, including at least 90 credits in chemistry, of which at least 15 credits must be in physical chemistry. In addition to courses in chemistry, 15 credits in mathematics are required.

Proficiency in English equivalent to English 6/B from Swedish upper-secondary school.

or

Bachelor's degree of at least 180 credits or the equivalent, including at least 75 credits in physics and 30 credits in mathematics. Proficiency in English equivalent to English 6/B from Swedish upper-secondary school.

How to apply

- 1. Apply online:** Go to www.lunduniversity.lu.se/chemistry-physical. Click on "Apply" and follow the instructions for the online application at www.universityadmissions.se, the Swedish national application website. Rank the chosen programmes in order of preference.
- 2. Submit your supporting documents:** Check what documents you need to submit (i.e. official transcripts, degree diploma/proof of expected graduation, translations, proof of English, passport) and how you need to submit them at www.universityadmissions.se.

3. Pay the application fee (when applicable).

Selection criteria/additional info

The selection will be based on grades awarded for previous academic courses in science, engineering and mathematics.

Tuition fees

Tuition fee SEK 170 000 per year for non-EU/EEA citizens. No fee for EU/EEA citizens. See www.lunduniversity.lu.se for details on tuition fees

ABOUT THE DEPARTMENT OF CHEMISTRY

The Department of Chemistry at Lund University provides world-class education and research within a wide area of chemistry. The Department of Chemistry is situated at Kemicentrum, Scandinavia's largest center for research and education in chemistry. It is a unique research environment close to several major research centers, research parks and industries. Our education is closely integrated with the department's research and all our students will have the opportunity to be involved in ongoing research projects during their studies.

The Department of Chemistry has a unique strength in undergraduate and postgraduate education in all areas of chemistry, as we belong to both the Faculty of Science and the Faculty of Engineering (LTH). The student services and support at the department is well-known and much appreciated by our students.

CONTACT

Programme webpage:

www.lunduniversity.lu.se/chemistry-physical

Study Advisors

Sophie Manner, sophie.manner@chem.lu.se, +45 (0)46 222 83 63

Lund University was founded in 1666 and is repeatedly ranked among the world's top universities. The University has around 45 000 students and more than 8 000 staff based in Lund, Helsingborg and Malmö. We are united in our efforts to understand, explain and improve our world and the human condition.

Learn more at www.lunduniversity.lu.se



LUND
UNIVERSITY