

# MSc in Pharmaceutical Technology: Discovery, Development and Production

LUND UNIVERSITY | SWEDEN

- Master of Science in Pharmaceutical Technology
- 2 years, full-time, 120 ECTS credits
- Faculty of Engineering
- Lund Campus
- Application deadline: January 2022
- Programme start: August 2022

## PROGRAMME OVERVIEW

The Master's programme in Pharmaceutical Technology will prepare you for an exciting career in pharmaceuticals, no matter if you aim for working in the pharmaceutical industry, regulatory authorities or for future PhD studies. The programme is one of few with a broad approach that includes the entire pharmaceutical process; from discovery and identification of the active substance, to the development and production of the final drug, covering both biomolecules and small organic pharmaceutical molecules. The programme aims to expose students to as authentic industrial development scenarios as possible, with strong emphasis on laboratory practice and project-based learning.

### Programme focus areas:

- Small organic molecule drug discovery including pharmacology
- Biological drug discovery including pharmacology
- Product development, production and quality assurance

The programme engages teachers from several strong interdisciplinary research departments at Lund University. It builds on well-established collaborations with the pharmaceutical industry as well as with other national and international, highly ranked, universities. For the final Master's thesis project, these collaborations will provide excellent opportunities for research at Lund University and beyond within a wide range of pharmacy-related research areas, in either academia or industry. Students in this programme will become part of a strong international research environment with access to excellent lab facilities and key equipment utilised within the pharma industry.

## Programme structure

Compulsory courses will secure that all students, independent of specialisation later on, gain general and sufficient in-depth knowledge for the discovery and product development of both small organic molecules and biologic pharmaceuticals as well as in formulation and production. During project courses, the students will choose to focus on either biologic pharmaceuticals or small organic molecules therapeutics and obtain more detailed, in-depth knowledge and skills in the respective area. Skills related to team work, project planning and management, practical lab work and documentation will be trained. Furthermore, the project courses will cover other aspects of the drug development chain, such as patents, preclinical and clinical trials as well as regulatory questions. GMP basics are included in the programme and students also have the possibility to gain deeper insights into quality assurance. The programme is concluded with a Master degree project.

Detailed course content: <http://kurser.lth.se/lot/?prog=M-LAK&val=program&lang=en>

## PROGRAMME MODULES/COURSES

**MANDATORY COURSES AND NUMBER OF ECTS CREDITS:** Medicinal Chemistry (7.5), Pharmaceutical Formulation and Production (7.5), Biopharmaceuticals (7.5), Project in Pharmaceuticals, Materials or Chemistry (15), Project in Life Science including Formulation (15) and Master's degree project (30).

**ELECTIVE MANDATORY COURSES (at least 15):** Advanced Analytical Chemistry (7.5), Organic Chemistry (7.5), Biophysical Chemistry (7.5), Surface and Colloid Chemistry (7.5), Quality and Product Safety (7.5) and Immunotechnology (7.5). **ELECTIVE COURSES:** Intro to Microfluids and Lab-on-a-chip Systems (7.5), Chemometrics, DoE and Multivariate analysis (7.5), Protein Engineering (7.5), Human Physiology (7.5), Downstream Processing in Biotechnology (7.5), Bioanalytical Chemistry (7.5) and Magnetic Resonance Spectroscopy and Imaging (7.5).



**“In our experience, the need for educated young professionals in the area of pharmaceuticals has never been higher. The industry expresses a growing demand for students with broad competences covering the whole development chain as well as the demands for large-scale production. We are proud to launch this new programme, tailor-made to not only meet the needs from industry, but also to pursue a career in academic research.”**

Jenny Schelin, Programme Director



## CAREER PROSPECTS

The pharmaceutical industry experiences a continuing and growing demand for the recruitment of highly skilled employees with insight and knowledge covering the entire development process leading to a drug. Graduates of the programme will be well-prepared to meet future challenges in an international, multidisciplinary pharmaceutical environment.

The programme is closely connected to one of northern Europe's strongest biotech regions, the Medicon Valley, hosting at least 200 international pharmaceutical companies and affiliates. Globally, the trend of small companies delivering lead compounds, analytical methods, and advanced formulation solutions to large pharmaceutical companies is widely spreading. This is a rapidly growing industry in need of qualified employees.

A likely first position for a student from this programme would be as organic or analytical chemist, as biochemist developing new biological pharmaceutical substances, as formulator of new drug products, at a position in the quality assurance field or within a regulatory authority. Alternatively, graduates could aim for further specialised studies as a PhD student.

## ENTRY REQUIREMENTS AND HOW TO APPLY

### Entry requirements

A Bachelor's degree in chemical engineering, biotechnology, chemistry, medicinal chemistry or equivalent. At least 10 credits/ECTS in completed, dedicated mathematics courses (including at least 5 credits algebra and analysis, 3 credits statistics). Completed courses of at least 60 credits/ECTS in chemistry, chemical engineering and/or biotechnology, of which at least 5 credits/ECTS in organic chemistry, 5 credits/ECTS in biochemistry/cell biology, and 5 credits/ECTS in analytical chemistry. English Level 6.

### How to apply

1. **Apply online:** Go to [www.lunduniversity.lu.se/pharmaceutical-technology](http://www.lunduniversity.lu.se/pharmaceutical-technology). Click on "Apply" and follow the instructions for the online application at [\[missions.se\]\(http://missions.se\), the Swedish national application website. Rank the chosen programmes in order of preference.](http://www.universityad-</a></li></ol></div><div data-bbox=)

### 2. Submit your supporting documents:

- **General 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](http://www.universityadmissions.se).
- **Programme-specific supporting documents:** For information on programme-specific documentation, please check the programme webpage.

### 3. Pay the application fee (when applicable)

### Tuition fees

Tuition fee SEK 145 000 per year for non-EU/EEA citizens. No fee for EU/EEA citizens. See [www.lunduniversity.lu.se](http://www.lunduniversity.lu.se) for details on tuition fees.

### Selection criteria/additional information

The selection is based on academic qualifications.

## ABOUT THE FACULTY OF ENGINEERING

The Faculty of Engineering, LTH, is a place for dreams and discoveries. We inspire creative development of technology, architecture and design and teach some of Sweden's most attractive Master's programmes, all built on a broad research base. LTH is among the leading engineering faculties in Europe with nearly 10 000 students. Over 1 000 researchers at LTH work hard to improve the quality of life for people and promote more careful use of the Earth's resources. A world record in 5G technology, solar cell-driven water purification, early cancer diagnosis, nanotechnology for more efficient solar panels, and a health-promoting oat drink are some of the innovations developed at LTH. Together we explore and create – for the benefit of the world.

## CONTACT

Programme webpage:  
[www.lunduniversity.lu.se/  
pharmaceutical-technology](http://www.lunduniversity.lu.se/pharmaceutical-technology)

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Lund University was founded in 1666 and is repeatedly ranked among the world's top 100 universities. The University has around 44 000 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.

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