

- Master of Science in Physics
- 2 years, full-time, 120 ECTS credits
- Faculty of Science
- Lund Campus
- Application deadline: January 2023
- Programme start: August 2023

## PROGRAMME OVERVIEW

The use of X-rays and neutrons in basic and advanced physics has expanded enormously the last decades, due to their exceptional properties, and Lund hosts two of the world's best facilities: The world's first 4th generation synchrotron radiation X-ray source, the MAX IV Laboratory, and the neutron facility European Spallation Source (ESS). In this world-unique MSc program, you will study the entire chain of X-ray and neutron science: from the creation of X-ray and neutron beams, to the fundamental physics of the interaction of such beams with matter, and their application in advanced measurement methods.

You will learn how X-rays can be used to understand materials, catalysis and crystal growth by spectroscopy, diffraction and microscopy, and how neutrons can be used to understand proteins, superconductivity and magnetism. You will also learn about the advanced electron and proton accelerators that are needed for the generation of X-rays and neutrons. Since these probes are used in a wide range of fields, from archeology to medicine, many research projects are interdisciplinary. The Master's programme is flexible and interdisciplinary, with a clear foundation in physics, and it is possible to combine theoretical or computational studies with experimental approaches.

As a Master's student you will become part of a vibrant research community, engaged in cutting-edge experimental and theoretical studies of problems in materials science, quantum physics and biology. The programme includes a Master's project carried out within one of the research groups. The close proximity to large-scale facilities and excellent materials science research groups provides excellent opportunities for inspiring Master's thesis research projects.

## PROGRAMME MODULES/COURSES

The programme offers a wide range of courses in X-ray and neutron science, as well as other areas of physics. At the end of the programme, you complete an individual Master's degree project corresponding to 30 or 60 ECTS credits. For more information, see: <https://www.fysik.lu.se/en/masters-programme-physics-x-ray-and-neutron-science>.

## CAREER PROSPECTS

A Master of Science in X-rays and neutrons will give you opportunities to pursue a wide variety of careers. Examples of career

prospects are researcher at one of the many companies using X-rays and neutrons, PhD studies in the areas of X-ray and neutron science, or research engineer at large scale facilities. Graduates of the programme will be well qualified for PhD programmes in physics and related fields.

## ENTRY REQUIREMENTS AND HOW TO APPLY

### Entry requirements

Bachelor's degree of at least 180 credits in physics or the equivalent. The degree must include at least 90 credits in physics. 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/x-ray-neutron-science](http://www.lunduniversity.lu.se/x-ray-neutron-science). Click on "Apply" and follow the instructions for the online application at [www.universityadmissions.se](http://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](http://www.universityadmissions.se).
- **Programme-specific supporting documents:** When applying for this programme, you must also submit a 'Summary Sheet' with your application. See the programme webpage for details.
- 3. Pay the application fee (when applicable).**

### Selection criteria/additional info

The selection will be based on grades awarded for previous academic courses, particularly qualifying courses, and the statement of purpose (from the applicant's 'Summary Sheet').

### Tuition fees

Tuition fee SEK 155 000 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

## ABOUT THE FACULTY OF SCIENCE

At Lund University's Faculty of Science, we study and describe the physical world. We seek to understand everything from the smallest components of nature and molecular processes in the human body to the sensitivity of climate systems and the capacity of exoplanets to support life. Research in science enables the development of new drugs, new building materials and models that predict climate change, and offers us the giddy realisation that we may not be alone in the Universe.



### ABOUT LUND UNIVERSITY

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.

Lund is considered one of the most popular study locations in Sweden. The University offers one of the broadest ranges of programmes and courses in Scandinavia, based on cross-disciplinary and cutting-edge research. The unique disciplinary range encourages boundary-crossing collaborations both within academia and with wider society, creating great conditions for scientific breakthroughs and innovations. The University has a distinct international profile, with partner universities in almost 70 countries.

Lund University has an annual turnover of more than EUR 880 million, of which two-thirds go to research in our nine faculties, enabling us to offer one of the strongest and broadest ranges of research in Scandinavia.

The establishment of the world-leading facilities MAX IV and European Spallation Source (ESS) will have a major impact on future scientific and industrial development in both materials science and life science. MAX IV is the leading synchrotron radiation facility in the world while ESS will feature the world's most powerful neutron source when it starts producing neutrons in 2023. These facilities together with the new University campus in Science Village will constitute a science complex and an international hub for research, education and innovation in which Lund University plays a central role.

### CONTACT

Programme webpage:

[www.lunduniversity.lu.se/x-ray-neutron-science](http://www.lunduniversity.lu.se/x-ray-neutron-science)

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Learn more at [www.lunduniversity.lu.se](http://www.lunduniversity.lu.se)

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