MSc in Large Scale Accelerators and Lasers

ERASMUS MUNDUS JOINT MASTER'S DEGREE

- Master of Science in Large Scale Accelerators and Lasers
- 2 years, full-time, 120 ECTS credits
- Erasmus Mundus Joint Master's Degree
- Paris-Saclay University, Lund University, Sapienza University of Rome, University of Szeged
- Application deadline: see www.master-lascala.eu
- Programme start: see www.master-lascala.eu

PROGRAMME OVERVIEW

The International Master of Science in Large Scale Accelerators and Lasers is a two-year educational programme in the Erasmus+ framework. Four leading universities with complementary expertise have joined to form a unique Master's programme directed towards large-scale scientific facilities, such as accelerators, synchrotrons and laser installations. These are:

- Paris-Saclay University, France (coordinator)
- Lund University, Sweden
- Sapienza University of Rome, Italy
- University of Szeged, Hungary

The LASCALA Master's aims at training experts in the most advanced experimental and theoretical tools and concepts in accelerators, high power lasers and associated advanced sources, as well as in their applications for science and society. The LASCALA master's was created within the frame of the European university alliance for Global Health - EUGLOH. The graduates from LASCALA will be ready to develop innovative ideas and enterprises related to large-scale facilities. The programme addresses an increasing demand for highly skilled scientists and engineers ready to contribute to this adventure by entering the job market with solid skills.

The programme includes classes, tutorials, project- and research-based trainings. Students will take advantage of seminars by international speakers, up-to-date technology demonstrations, as well as visits to and practices at large scale facilities (e.g. Synchrotron SOLEIL, Pettawatt laser APOLLON, Proton Therapy Centre of Orsay, Lund Laser Centre, Max IV synchrotron, ELI Beamlines laser facility, SPARC particle accelerator, FLAME multiterrawatt laser, CERN, ITER Tokamak, Laser Mégajoule (LMJ), European Spallation Source, etc.).
The study programme gives the possibility to attend a number of summer schools at renowned European institutions, including one summer school on entrepreneurial skills, focusing on economy management, communication, patent law, and technology transfer courses, providing the students with valuable skills for entering the job market. The strong partnership with industry and research & innovation centres allows the students to strengthen their professional skills and build their international network.

PROGRAMME MODULES/COURSES

- **Semester 1, Paris Saclay University:** Courses selected to give a good basis for the different mobility options during the programme.
- **Semester 2 (mobility track 1), Lund University:** Courses in atomic physics, photonics and their applications.
- **Semester 2 (mobility track 2), Sapienza University of Rome:** Courses in the field of accelerator and particle physics.
- **Summer school in Science management.**
- **Semester 3 (mobility track 1), University of Szeged:** Courses in ultrafast optics and hands-on experience at ELI-ALPS, the most modern large-scale laser infrastructure in the world.
- **Semester 3 (mobility track 2), Paris-Saclay University:** Courses in laser-, plasma and accelerator physics.
- **Semester 4:** Master's thesis. Can be performed at the associated partners or at other universities, industry or research institutes.

"I feel that there is a healthy student environment at Lund University, where group work is encouraged as well as learning through understanding and not memorising facts. Moreover, I think there is a good communication between teachers and students, which I see reflected in less stress as you have a good idea of the work that needs to be done in order to pass the course or to get a higher grade."

Daniel, former student at the Department of Physics at Lund University

Depending on the choice of mobility throughout the programme, the students can obtain two or three degree certificates.

CAREER PROSPECTS

Large-scale science infrastructures are often multi-billion Euro investments with the aim to give answers to society's and humanity's most demanding problems. However, making use of the infrastructures in the most efficient way, requires very skilled personnel both at the facilities but also in the research groups and industries using the installations. LASCALA is dedicated to educate these specialists, which will have prominent job opportunities in science and high-tech industry in their respective home countries or worldwide.

ENTRY REQUIREMENTS AND HOW TO APPLY

Entry requirements

Applicants should have or should be in the process to obatin a Bachelor's degree in Physics (basic or applied physics), engineering and related topics (optics, nuclear, photonics), corresponding to 180 ECTS, at the time of the application. Additionally, students that intend to study in Lund as part of the programme, need completed courses of at least 40 ECTS in physics and 30 ECTS in mathematics, covering quantum mechanics, electromagnetism, basics in optics, multi-dimensional calculus, linear algebra and Fourier analysis as well as sufficient English language proficiency. See www.master-lascala.eu for requirement details.

How to apply

See www.master-lascala.eu for detailed application instructions, application forms and deadlines.

Tuition fees

See www.master-lascala.eu for details on tuition fees and scholarships.

Selection criteria/additional information

The following criteria will be applied in the selection process:

- 50% Academic (and professional when relevant) workloads (including appropriateness of the curriculum, grades.)
- 20% Motivation and professional project
- 15% Recommendation letters
- 10% English proficiency
- 5% Involvement in associations, networks or any other extra-curricular activities showing personal leadership and dynamic abilities

ABOUT LUND

Lund University was founded in 1666 and is repeatedly ranked among the world's top 100 universities. The University has around 46 000 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.

Funded by
the European Union

CONTACT
Programme webpage:
www.master-lascala.eu

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Learn more at www.lunduniversity.lu.se

LUND UNIVERSITY