Programme overview
Physics teaches us how to construct and apply models of phenomena in the world around us, spanning scales from the very smallest to the very largest. Biology has long been a rich source of open questions, but we cannot understand life without understanding the physics and mathematics that govern living things. For that reason, many renowned physicists, such as Richard Feynman, Wolfgang Pauli, Niels Bohr, Max Delbrück and Erwin Schrödinger, turned their attention to biological problems and in some cases made substantial contributions to new fields such as molecular biology.

Biology has increasingly become a quantitative science, where scientists from different backgrounds together address a range of unresolved problems, e.g. how biomolecules adopt their specific shape, how they interact in cells and how cells divide and communicate. The methods of theoretical physics, such as statistical methods, machine learning, modelling and simulation, form an invaluable toolbox for approaching many of these problems.

The Department of Astronomy and Theoretical Physics offers a physics programme with specialisation in biological physics and computational biology, which combines a solid base of courses in theoretical and mathematical physics with courses in other subjects taught at the relevant departments, such as physics, chemistry and biology.

As a Master’s student, you will become part of a vibrant research community at the Computational Biology and Biological Physics division, engaged in cutting-edge theoretical studies of biological problems in collaboration with experimental groups worldwide. The programme includes a Master’s project carried out within one of the research groups.

Programme modules/courses
The programme offers a wide range of courses. Some suggested courses are Computational Physics, Theoretical Biophysics, Artificial Neural Networks and Deep Learning, Systems Biology, Statistical Mechanics and Experimental Biophysics.

At the end of the programme, you complete an individual Master’s degree project corresponding to at least 30 ECTS credits.

Please see www.fysik.lu.se/english/education/start-studying/masters-programme for information on compulsory and elective courses.

Career prospects
A specialisation in biological physics will give you opportunities to pursue a wide variety of careers. Whereas some students go on to do a PhD in theoretical physics or computational biology, it is also possible to find suitable careers outside academia, for example in the fields of information and communication technology or biotechnology, where advanced programming and modelling are sought after.

In addition, MAX IV and the upcoming ESS laboratory in Lund will create new opportunities for graduates with a degree in physics, including biological physics and computational biology.

Entry requirements and how to apply
ENTRY REQUIREMENTS
A Bachelor’s degree of at least 180 credits in physics or the equivalent. The degree must include at least 90 credits in physics. English Level 6 (equivalent to IELTS 6.5, TOEFL 90). See www.lunduniversity.lu.se for details on English proficiency levels.
HOW TO APPLY
1. Apply online: Go to www.lunduniversity.lu.se/biological-physics. Click on “Apply” and follow the instructions for the online application at the Swedish national application website www.universityadmissions.se. Rank the chosen programmes in order of preference.
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.
   • 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 INFORMATION
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
There are no tuition fees for EU/EEA citizens. For non-EU/EEA citizens, the tuition fee for this programme is SEK 145 000 per year. See www.lunduniversity.lu.se for details on tuition fees.

About the Department of Astronomy and Theoretical Physics
The Department of Astronomy and Theoretical Physics spans a very large range of research activities: theoretical particle physics, computational biology and biological physics, theoretical astrophysics, observational astronomy and research on atomic data as well as on instrument development. We have vibrant and active research groups in all areas. Of special relevance for the Master’s programme in biological physics is the research on, for example, DNA barcoding, stem cell regulation, protein aggregation and neural network classifiers.

About Lund University
Lund University was founded in 1666 and is repeatedly ranked among the world’s top 100 universities. The University has 40 000 students and 7 600 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 the most popular study location in Sweden. Lund University offers one of the broadest ranges of programmes and courses in Scandinavia, based on cross-disciplinary and cutting-edge research. The University has a distinct international profile, with partner universities in around 70 countries.

Lund University has an annual turnover of SEK 8.5 billion, more than half of which is destined for research. Our eight faculties conduct strong research in many different areas, including over thirty research fields in which we are world-leading. Many scientific breakthroughs and pioneering innovations have originated from Lund University.

Learn more at www.lunduniversity.lu.se
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