Faculty of Science

NAAFY, Master Programme in Astrophysics, 120 credits

Masterprogram i astrofysik, 120 högskolepoäng

Second-cycle programme requiring previous university studies / Program med akademiska förkunskapskrav och med slutlig examen på avancerad nivå

Decision

The syllabus was approved by The Board of Faculty of Science on 2007-10-24 (N 2007-44) and was last revised on 2026-05-28 by The Education Board of Faculty of Science (U 2026/337). The revised syllabus comes into effect 2026-10-15 and is valid from the autumn semester 2027.

Programme description

The programme for a degree of Master of Science specialising in Astrophysics comprises 120 credits and leads to a degree of Master of Science (120 credits) with a major in Astrophysics.

The programme is based on scholarship and is closely linked to research conducted at the Lund University Faculty of Science. The operations at the faculty uphold academic credibility and good research practice and are arranged to ensure that high standards are attained in courses and study programmes. Furthermore, the operations promote sustainable development, equality between women and men and understanding of other countries and international circumstances. These aspects are integrated in the degree outcomes of the programme.

Second-cycle courses and study programmes in the main field of Astrophysics are fundamentally based on the knowledge acquired by students during first-cycle courses and study programmes.

Second-cycle courses and study programmes in the main field of Astrophysics involve the acquisition of specialist knowledge, competence and skills in relation to first-cycle courses and study programmes, and in addition to the requirements for first-cycle courses and study programmes shall:
- further develop the ability of students to integrate and make autonomous use of their knowledge,
- develop the students' ability to deal with complex phenomena, issues and situations, and
- develop the students' potential for professional activities that demand considerable autonomy, or for research and development work.

The programme applies a learning perspective, in which students take an active role in the learning process, and consciously and continuously reflect on their learning and development towards the degree outcomes.

Goals

Knowledge and understanding

For a Degree of Master (120 credits) the student shall:

- demonstrate knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrate specialised methodological knowledge in the main field of study.

Competence and skills

For a Degree of Master (120 credits) the student shall:

- demonstrate the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information
- demonstrate the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work
- demonstrate the ability in speech and writing both nationally and internationally to clearly report and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and
- demonstrate the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

Judgement and approach

For a Degree of Master (120 credits) the student shall:

- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work
- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Course information

The programme comprises 2 years for a degree of Master (120 credits). The appendix Achievement of learning outcomes for a degree of Master of Science with a major in Astrophysics at the Faculty of Science describes the courses included.

A Degree of Master (120 credits) is awarded after the student has completed the courses required. In addition, the prior award of a Degree of Bachelor of at least 180 credits or a corresponding qualification from abroad is required. To acquire the fundamentally based advanced knowledge and understanding, competence and skills as well as judgement and approach required to meet the learning outcomes for a degree of Master of Science (120 credits) with a major in Astrophysics , new knowledge building upon the underlying Bachelor's degree is necessary.

See attatchment NAAFY - Programme Structure and course requirements for Master Programme in Astrophysics, 120 credits.pdf

Degree

Degree titles

Degree of Master of Science (120 credits)
Main field of study: Astrophysics
Naturvetenskaplig masterexamen
Huvudområde: Astrofysik

Entry requirements and selection method

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.

Selection method

Based on grades awarded for previous academic courses, particularly qualifying courses, and a statement of purpose for the application (from the applicant's "Summary sheet").

Transition rules

The Faculty Board may decide on the discontinuation of a programme or main field and may also decide, in association with this, on transitional provisions for students who have started these programmes.

Other information

Rules for grades and assessment are included in the course syllabi approved by the Faculty Board.

LUND UNIVERSITY

FACULTY
OF SCIENCE

Department of Physics

Appendix 1 for programme syllabus,
NAAFY Master Programme in
Astrophysics, 120 credits

Reg. No.
U 2026/337

Date 2026-05-28

Programme Structure and course requirements for Master Programme in Astrophysics, 120 credits

The programme comprises two years of full-time studies (120 credits) and leads to a degree of Master of Science with major in Astrophysics.

Mandatory courses

Mandatory courses of 37.5 credits.

ASTM27	Astronomy: Extragalactic Astronomy, 7.5 credits
ASTM30	Astronomy: Planetary Systems, 7.5 credits
ASTM25	Astronomy: Stellar Structure and Evolution, 7.5 credits
ASTM28	Astronomy: Dynamical Astronomy, 7.5 credits
ASTM29	Astronomy: Statistical Tools in Astrophysics, 7.5 credits

Elective courses

Possible elective courses of 22.5 credits.

This list includes courses offered by the department itself and suitable for the Master's programme in Astrophysics. However, there is nothing preventing students from choosing completely different courses in consultation with the coordinator. These could be courses in mathematics, biology, geology, physics, or other areas relevant and interesting to the student. Note that the course must be offered during a semester when the student is to choose an elective course or has already taken one of the mandatory courses.

FYSN29	Physics: Cosmology and Astroparticle Physics, 7.5 hp
FYTN16	Theoretical Physics: Classical Mechanics, 7.5 credits
FYTN18	Theoretical Physics: Theoretical Particle Physics, 7.5 credits
FYSN28	Physics: General Relativity, 7.5 credits
FYSN31	Physics: Mathematical Methods of Physics, 7.5 credits
FYSN33	Physics: Applied Computational Physics and Machine Learning, 7.5 credits
FYSC20	Physics: Electromagnetism, 7.5 credits
FYTA14	Theoretical Physics: Fluid Dynamics, 7.5 credits
ASTM23	Astronomy: High Energy Astrophysics, 7.5 credits
ASTM26	Astronomy: Observational Techniques and Instrumentation, 7.5 credits
ASTC14	Astronomy: Radiation Processes and Stellar Atmospheres, 7.5 credits
BERN04	Computational Science: Introduction to Artificial Neural Networks and Deep Learning, 7.5 credits
MNXA19	Science: The Scientific Method, 7.5 credits

Degree Project

Degree project of 60 credits.

ASTM32, Astronomy: Master's Degree Project, 60 credits