SH2404 Astrophysics 7.5 credits

Astrofysik

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The official course syllabus is valid from spring semester 2027 as decided by the Director of First and Second Cycle Education. Decision date:2026-08-14

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Engineering Physics

Specific prerequisites

English B/English 6

Completed course in Classical Physics (SK1104, SK1108, MJ1530 or equivalent).

Intended learning outcomes

After passing the course, the student must be able to:

- Plan and carry out simple observations as well as evaluate the results and suggest improvements.

- Describe different observation techniques and instruments and evaluate their advantages and disadvantages. Explain how astronomical observations and measurements are carried out.
- Describe the physical processes of how radiation is transported through matter and in the universe. Explain how absorption and emission lines arise and how they can be used in analysis.
- Explain and apply the theory of celestial mechanics, i.a. explain Kepler's laws.
- Based on physical reasoning, explain the main stages in the development and structure of different star types.
- Account for observations of the large-scale structure of the universe and reflect on theories for structure formation in the universe on both large and small scales.
- Explain various aspects of the study of exoplanets.

Course contents

Observational techniques and instruments, radiation transport, celestial mechanics, star formation and evolution and large-scale structure of the universe, exoplanets.

Examination

- TEN1 - Examination, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM1 - Seminar, 1.0 credits, grading scale: P, F
- TEN2 - Exam, 1.5 credits, grading scale: P, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.