



Course syllabus

Faculty of Technology

Department of Physics and Electrical Engineering

1FY510 Astrofysik, 7,5 högskolepoäng

Astrophysics, 7.5 credits

Main field of study

Physics

Subject Group

Physics

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved 2014-10-03

Revised 2018-06-01 by Faculty of Technology. Objectives, content and literature list is revised.

The course syllabus is valid from autumn semester 2018

Prerequisites

Physics 30 credits

Objectives

The purpose of the course is to give the student basic knowledge in the different areas of astronomy and insight in the corresponding physical phenomena, including an orientation in elementary particle physics.

Upon completing the course the student should be able to:

- describe the subnuclear constituents of nature and their interaction and describe experimental activities in particle physics
- describe the most important observational methods and coordinate systems in astronomy
- describe the celestial bodies of the solar system, their properties and the mechanisms of their production
- give an account of celestial dynamics and perform basic dynamic calculations
- describe radiation mechanisms and their connection to stellar spectra and perform basic radiation calculations
- describe properties, structure, energy production, evolution and final stages of stars
- describe variable stars and their importance for the distance scale of the Universe
- describe the contents and dynamics of the Milky Way galaxy, including the mechanisms of star formation

- describe the contents and dynamics of galaxies and galactic clusters as well as active galactic nuclei
- describe the largest structures and history of the observable Universe

Content

The course content is:

- The sky of stars and coordinate systems. Observational techniques. Celestial mechanics. The solar system. Radiation mechanism and stars. Structure and development of stars. The interstellar medium. Formation of stars and planets. The Milky Way. Galaxies and galactic clusters. Big Bang and the development of the universe.
- The standard model in particle physics and experimental methods used in particle and astroparticle physics, detectors used in both fields.

Type of Instruction

The teaching consist of lectures.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The examination may be given in writings and/or orally and consists of theoretical questions or problems to solve. The type of assessment used in the course will be decided on at the beginning of the course.

Students' who do not pass the regular examination are given the opportunity to do a resit examination shortly after the regular examination.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 1FY810 Astrophysics, 7.5 credits

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

Required reading

Copied material supplied by the department. Other literature suggestions will be given during the course.