



Course syllabus

Faculty of Technology

Department of Physics and Electrical Engineering

2FY809 Kosmologi med relativitetsteori, 7,5 högskolepoäng

Cosmology and Relativity, 7.5 credits

Main field of study

Physics

Subject Group

Physics

Level of classification

First Level

Progression

G2F

Date of Ratification

Approved 2009-12-01

Revised 2017-01-19 by Faculty of Technology. Prerequisites and literature list is revised.
The course syllabus is valid from autumn semester 2017

Prerequisites

Physics 45 credits and Mathematics 30 credits or equivalent.

Objectives

Having completed the course the student is expected to:

- have a thorough knowledge of special relativity and basic knowledge of general relativity and applications of these
- understand and be able to account for the structure and evolution of the universe
- understand and be able to account for the Big Bang model and its experimental and theoretical background
- have the ability to also verbally discuss and describe the subject area

Content

- Relativity: Lorentz transformation, four vectors, metric, curved space, principle of equivalence, Schwarzschild metric, black holes, light bending, Einstein field equations, gravitational waves
- Cosmology: cosmography, views of the universe throughout history, observational cosmology and measurements, the cosmological principle, Robertson-Walker metric, the expansion and development of universe, background radiation, nucleosynthesis, inflation

Type of Instruction

Teaching consists of lectures and seminars.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

Assessment of the student's performance is made through written examination and/or assignments which are presented orally and/or in written form. The assessment method is decided at the start of the course.

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

Course Evaluation

A written course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The course evaluation will be filed at the department.

Other

On request, a Swedish University course certificate will be awarded upon successful completion of the course.

Upon request, a Swedish University degree will be issued upon successful completion of the full demands for that degree.

Required Reading and Additional Study Material

Required reading

Barbara Ryden, *Introduction to Cosmology*, Addison Wesley, latest edition. Pages 234.

General relativity (compendium), phys. dept. Pages 40.

Contemporary articles, phys. dept. Pages 10.