Linnæus University

Jnr: 2018/1236-3.1.2.2

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 2018-04-23 by Faculty of Technology. Removal of ECTS-grading scale and course evaluation is changed.
The course syllabus is valid from autumn semester 2018

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).
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

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.

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.