

**SYLLABUS**

# **Cosmology 7.5 credits**

## **F7007R**

**Kosmologi**

**Course syllabus admitted: Autumn 2017 Sp 1 - Present**

**DECISION DATE**  
**2017-02-15**

# Cosmology 7.5 credits F7007R

## Kosmologi

### Second cycle, F7007R

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Rymd- och atmosfärsvetenskap	Space Technology

## Entry requirements

Basic courses in analysis in one and several dimensions, linear algebra, vector analysis, mechanics (corresponding to F0006T), modern physics (corresponding to F0005T), electromagnetic theory (corresponding to F0007T), and flow mechanics (part of F0030T). Knowledge in general relativity is recommended. Basic knowledge in astronomy is useful. Likewise knowledge in atomic and nuclear physics are useful.

## Selection

The selection is based on 30-285 credits

## Examiner

Johnny Ejemalm

## Course Aim

The student shall acquire understanding of and knowledge of the large scale structure of the universe and its history. This is shown by the ability for explanation of concepts and physical conditions as well as course of events within the subject.

The student shall have the ability to perform theoretical calculations of cosmological properties and parameters founded on cosmological models, and have the ability to orally and/or in writing communicate analysis and calculations.

The student shall be aware that cosmology has a special place in the physical disciplines in that not all usual criteria for science can be fulfilled. This is shown by the ability to evaluate the consequences of this relationship.

## Contents

The cosmological principle, Friedman models, The Big Bang model, the thermal history of the universe, problem with Hot Big Bang model, inflation, formation of structures, dark matter. Observations such as cosmic background radiation, galaxy formation, redshift and gravitational lenses.

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures. Depending of the number of students can the course be realized in seminar form or as a self study course.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

The examination consists of three parts: oral examination (40%), hand-in exercises (40%), and written report (20%). Each of these moments is graded with Approved (G) or Not Approved (U). All three moments are scored and the final grade of the course are given the marks (5, 4, 3, U) based on a weighted appraisal of the results of the examination parts. In order to pass the course it is required that all three moments are approved.

## Remarks

Advanced level.

## Overlap

The course F7007R is equal to RYM029

## Literature. Valid from Autumn 2017 Sp 1

Ryden, Barbara. Introduction to Cosmology, 2 ed., Cambridge University Press 2017. ISBN 978-1-107-15483-4.

## Course offered by

Department of Computer Science, Electrical and Space Engineering

## Items/credits

Number	Type	Credits	Grade
0002	Oral examination	3	U G#
0003	Hand-in tasks	3	U G#
0004	Written report	1.5	U G#

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Jonny Johansson, HUL SRT 2017-02-15

## Syllabus established

The course plan was accepted by the Dept of Space Science 2007-02-28 and remains valid as from H07.