Department of Astronomy

Stockholm University

Syllabus

for course at first level

Cosmology
Kosmologi

7.5 Higher Education Credits
7.5 ECTS credits

Course code:	AS5003
Valid from:	Autumn 2019
Date of approval:	2018-01-15
Changed:	2018-01-15
Department	Department of Astronomy
Main field:	Astronomy
Specialisation:	G2F - First cycle, has at least 60 credits in first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University 2018-01-15. Technical revision 2019-04-26

Prerequisites and special admittance requirements

To enter this course knowledge corresponding to the first to years of a Bachelor's degree in Physics, or similar, is required.

Course structure

Examination code	Name	Higher Education Credits
HELA	Cosmology	7.5

Course content

The course includes the world models of general relativity, the expansion of the Universe, thermodynamics and nucleosynthesis in the early Universe, dark matter and dark energy, methods for measuring cosmological parameters, the cosmic microwave background and the inflation model.

Learning outcomes

Upon completion of the course, students are expected to be able to
• describe the theoretical background to modern cosmology, the main outlines in the history of the Universe as well as contemporary presentations of problems in cosmology
• describe and execute calculations regarding the dynamics of the Universe, its energy components, the cosmic background radiation, nucleosynthesis and thermodynamics in the early Universe as well as the inflation model
• describe and execute calculations regarding observational methods which can be used to determine properties of the Universe
• show in-depth knowledge about modern research results and methods within a special area of cosmology and to express this orally and in written form.

Education

The education consists of lectures and exercises.
The education may be given in English.

Forms of examination

a. The course is examined as follows: Knowledge assessment takes the form of written examination, hand-in exercises and a written and oral report of a literature study.

b. Grades will be set according to a seven-point scale related to the learning objectives of the course:
A = Excellent
B = Very Good
C = Good
D = Satisfactory
E = Sufficient
Fx = Fail
F = Fail

c. Grading criteria for the course will be distributed at the start of the course.
Late submission of the hand-in exercises, written and oral report will have consequences for the final course grade, which are described in more detail in the course's grading criteria.

d. In order to pass the course, students must receive a passing grade on all course units and participate in all mandatory instruction.

e. Students who receive a failing grade on a regular examination are allowed to retake the examination as long as the course is still provided. The number of examination opportunities is not limited. Other mandatory course elements are equated with examinations. A student who has received a passing grade on an examination may not retake this examination to attain a higher grade. A student who has failed the same examination twice is entitled to have another examiner appointed, unless there are special reasons to the contrary. Such requests should be made to the departmental board.
The course includes at least two examination opportunities per year when the course is given. At least one examination opportunity will be offered during a year when the course is not given.

f. Students awarded the grade Fx are given the opportunity to improve their grade to E. The examiner decides the supplementary assignments to be performed and the pass mark criteria. The supplementary assignments will take place before the next examination session.

Interim

Students may request that the examination be conducted in accordance with this course syllabus even after it has ceased to apply. However, this may not take place more than three times over a two year period after course instruction has ended. Requests must be made to the departmental board. The provision also applies in the case of revisions to the course syllabus.

Limitations

The course may not be included in a degree together with the courses ”Kosmologi gk, 5p” (AI1340), "Kosmologi, 7.5hp (AS7009), or the equivalents.

Misc

The course is a part of the Bachelor's programme in Astronomy, but can also be read as a separate course.

Required reading

The course literature is decided by the departmental board and published on the Department of astronomy's website at least two months before the start of the course.