Faculty of Science

ASTM19, Astronomy: Extragalactic Astronomy, 7.5 credits

Astronomi: Extragalaktisk astronomi, 7,5 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2010-05-26 (N 2010/311). The syllabus comes into effect 2010-05-26 and is valid from the autumn semester 2010.

General information

The course belongs to the main fields of astrophysics and physics at the faculty of Science. The course is a compulsory course for second-cycle studies for a Degree of Master of Science (120 credits) in astrophysics. The course is an elective course for first-cycle studies for a Bachelor of Science and second-cycle studies for a Master's degree (120 credits) in physics.

Language of instruction: English

Main field of study	*Specialisation*
Astrophysics	A1N, Second cycle, has only first-cycle course/s as entry requirements
Physics	A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

The aims of the course are that, upon completion of the course, the students should have acquired the following knowledge and skills:

Knowledge and understanding

On completion of the course, the student should:

- be able to describe the current paradigm in galactic formation
- be able to explain interaction between stars and gas in a galaxy and how our understanding of this is supported by observations and computer simulations

- be able to describe the origin of the cosmic microwave background
- be able to describe the formation of elements heavier than H and He
- be familiar with the most important parts of the evolution of the universe and be able to describe them orally as well as in writing and supporting the arguments with equations

Competence and skills

On completion of the course, the student should:

- independently be able to carry out simple calculations that describe the dynamic development of the universe
- independently be able to make calculations of the age of universe, distances to galaxies etc for a given metric/cosmology

Judgement and approach

On completion of the course, the student should:

- independently be able to evaluate the scientific content of scientific articles and discuss them with fellow students
- independently be able to summarise the scientific contents of a series of articles and present this in written form

Course content

Einstein's field equations, their solutions and applications. Nucleosynthesis in the early universe. Determination of the Hubble constant and other constants and parameters that decide the physical universe. The thermal and dynamic development of the universe. The formation of galaxies and large-scale structure in the universe.

Course design

The teaching consists of lectures, seminars and group work.

Assessment

The examination consists of a written test at the end of the course.

Students who do not pass the regular exam are offered a re-exam shortly after the regular exam.

Grades

Grading scale includes the grades: Fail, Pass, Pass with distinction
To pass the entire course, a passed examination is required.

Entry requirements

The prerequisites required for admission to the course are: English B and knowledge equivalent to Galaxies and cosmology (ASTA33) 7.5 credits and/or General relativity (FYTN08) 7.5 credits.