

Syllabus

for course at first level

Stellar Structure and Evolution
Stjärnornas struktur och utveckling

**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	AS5002
Valid from:	Autumn 2018
Date of approval:	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.

Prerequisites and special admittance requirements

To be admitted to this course knowledge corresponding to the first two years of the Bachelor's programme in astronomy, or similar, is required. In addition, at least 15 HECs in quantum physics corresponding to the courses Quantum Mechanics, 7.5hp (FK5020) and Atomic and Molecular Physics, 7.5hp (FK5023), is required. Also required is knowledge equivalent to Swedish upper secondary school course English 6, or equivalent to one of the following tests; Cambridge CPE and CAE: Pass, IELTS: 6.0 (with no part of the test below 5.0), TOEFL (paper based): 550 (with minimum grade 4 on the written test part), TOEFL (computer based): 213, TOEFL (internet based): 79.

Course structure

Examination code	Name	Higher Education Credits
HELA	Stellar structure and evolution	7.5

Course content

The course addresses the basic physical processes and concepts that determine the structure and evolution of stars, such as equations of state of gases, hydrostatic equilibrium, energy transfer, nuclear burning and nucleosynthesis. It further deals with the connection between the stars' observational and physical properties such as the relation between mass, luminosity and temperature. The course also discusses how a star's structure evolves with time.

Learning outcomes

Upon completion of the course, students are expected to be able to

- describe observational properties of stars
- explain the physical principles that govern the structure of stars
- describe the different stages of the evolution of stars
- describe the stellar nucleosynthesis processes and their dependence on stellar mass.

Education

Instruction consists of lectures, exercises and laboratory work.

Participation in the laboratory work and any associated integrated instruction is compulsory. In the event of special circumstances, the examiner may, after consultation with the teacher concerned, grant a student exemption from the obligation to participate in certain compulsory instruction.

Forms of examination

a. The course is examined as follows: Knowledge assessment takes the form of written examination, oral examination, hand-in exercises, written report of laboratory work. If the instruction is in English, the examination may also be conducted in English.

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. The grading criteria will be distributed at the start of the course.

Late submission of the hand-in exercises and written reports 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 examinations in combination with the courses "Stjärnornas struktur och utveckling", 5p (AI1360), "Stjärnornas struktur och utveckling", 7.5hp (AS7010), "Stjärnornas struktur och utveckling", 7.5 hp (AS7020) or equivalent.

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.