



Faculty of Science

## **ASTA04, Astronomy: Conditions for Life in the Universe, 7.5 credits**

*Astronomi: Livsbetingelser i universum, 7,5 högskolepoäng*  
**First Cycle / Grundnivå**

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### **Details of approval**

The syllabus was approved by Study programmes board, Faculty of Science on 2010-10-22 and was last revised on 2010-10-22 by Director of Studies in Astronomy and Theoretical Physics. The revised syllabus applies from 2010-10-22, autumn semester 2010.

### **General Information**

The course is included in the main field of physics at the Faculty of Science and is offered by the Department of Astronomy and Theoretical Physics. It is an elective component of a Bachelor of Science degree in Physics.

*Language of instruction:* Swedish

*Main field of studies*

Physics

*Depth of study relative to the degree requirements*

G1N, First cycle, has only upper-secondary level entry requirements

### **Learning outcomes**

The objective is that the students, on completion of the course, shall have acquired a good general understanding of life on Earth and other planets, both within and outside our own solar system, how the search for life in the universe is conducted and how this search is affected by the conditions for life.

### **Knowledge and understanding**

On completion of the course, the students shall

- be able to account for astronomical concepts and phenomena of relevance to the search for life in the universe
- demonstrate good awareness of the conditions for life on other planets and celestial bodies in the solar system
- demonstrate awareness of the different theories of the origins of life/arrival of life on Earth, focusing especially on astronomical explanations
- demonstrate good awareness of the different methods employed in astronomy to find planets surrounding other stars and the limitations of these methods
- demonstrate knowledge of the observational conditions of finding and identifying life on other planets in the universe and of the limitations of these methods

### **Competence and skills**

On completion of the course, the students shall be able to

- independently discuss the possibilities of life under different conditions

### **Judgement and approach**

On completion of the course, the students shall be able to

- critically monitor the future development of the field as it is reflected in wider society (e.g. through media)
- discuss, together with their fellow students, the way in which the media address astronomical news, especially with regard to astrobiology
- discuss the content of science fiction with regard to its realism vis-à-vis our current knowledge within astronomy and the search for life in the universe

### **Course content**

The course includes the following components:

- Introduction to astrobiology
- What is life?
- Important astronomical concepts of relevance to the search for life in the universe
- The search for life in our solar system
- The search for life on planets outside our solar system
- The methods of finding planets surrounding other stars
- The importance of technological development for the search for life in the universe
- Explaining the arguments leading to the Drake equation
- The search for life in the universe from a historical perspective
- The evolution of life on Earth from an astronomical perspective

### **Course design**

The teaching consists of lectures and study questions throughout the course.

## **Assessment**

For a grade of Pass on the course, the student must have passed the study questions. The grade of Pass with Distinction can be attained through an additional written exam.

Students who fail an assessment will be offered another opportunity for assessment soon thereafter.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## **Grades**

Marking scale: Fail, Pass, Pass with distinction.

For a grade of Pass on the whole course, the student must have passed the study questions. The grade of Pass with Distinction can be attained through an additional written exam.

## **Entry requirements**

General requirements for university studies in Sweden

## **Further information**

The course may not be included in a degree together with ASTC01 Astrobiology – The Conditions for Life in the Universe, 7.5 credits.

## Subcourses in ASTA04, Astronomy: Conditions for Life in the Universe

### Applies from V14

- 1011 Examination, 6,0 hp  
Grading scale: Fail, Pass, Pass with distinction
- 1012 Study visit, 0,5 hp  
Grading scale: Fail, Pass
- 1013 Hand-in, 1,0 hp  
Grading scale: Fail, Pass, Pass with distinction

### Applies from V12

- 1002 Conditions for Life in the Universe, 6,5 hp  
Grading scale: Fail, Pass, Pass with distinction
- 1003 Study Visit, 1,0 hp  
Grading scale: Fail, Pass