



**LUND**  
UNIVERSITY

Faculty of Science

## **ASTM20, Astronomy: Planetary Systems, 7.5 credits**

*Astronomi: Planetsystem, 7,5 högskolepoäng*

Second Cycle / Avancerad nivå

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### **Details of approval**

The syllabus was approved by Study programmes board, Faculty of Science on 2009-11-26 to be valid from 2009-11-27, spring semester 2010.

### **General Information**

The course is a compulsory course for second-cycle studies for a Degree of Master of Science (120 credits) in astrophysics.

*Language of instruction:* English and Swedish  
If needed, the course is given in English.

*Main field of studies*

Physics

Astrophysics

*Depth of study relative to the degree requirements*

A1N, Second cycle, has only first-cycle course/s as entry requirements

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### **Learning outcomes**

On completion of the course, the student should have acquired knowledge and skills to be able to describe, evaluate and critically discuss current scientific results and problems, as well as methods and instrumentation, for the exploration of planets and planetary systems, both in our own solar system and around other stars (exoplanets).

The student should  
*at general level be able to describe*

- Different topics in the subject area, such as e.g. the internal structure of planets; the surfaces of terrestrial planets; the atmospheres of giant planets; the orbits of minor bodies of the solar system; the structure of rings around planets; methods for detection of exoplanets; instrumentation to study exoplanets; theories of the

origin of planets and planetary systems; the conditions for planets around double stars; how planetary systems can evolve together with the central star; and the conditions for planets where life should be able to exist.

*at a more detailed level be able to describe*

- One or a couple of selected topics within the subject area which is related to current research. For these, a more independent literature study should have been carried out and been presented in oral, written and/or computer-based form.

*have obtained training in*

- critically reviewing and discussing articles that describe current research
- computer-based literature search within research areas close to the front line of science

## **Course content**

The course describes the giant planets of the solar system, terrestrial planets, their atmospheres, moons and rings, as well as dwarf planets, comets and other minor bodies; their physical and chemical properties, their probable origin and possible evolution. In addition, the orbits of planets and minor bodies around the sun and the processes that influence these are discussed. Current and planned methods and instruments to discover and analyse exoplanets are evaluated and existing data studied, also including reflections over the possibility of life on these.

## **Course design**

The teaching consists of lectures, seminars, group work and project work. A field trip to another location may possibly also be included. Participation in seminars, group work and project work and thereby integrated other teaching is compulsory.

## **Assessment**

An essential part of the examination consists of active participation in seminar exercises, other supplementary examination normally takes place in the form of a written or oral test at the end of the course. For students who then do not pass, additional examination opportunities in close connection to this are offered in order to pass the course.

*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.

To pass the entire course, participation in all compulsory parts, passed project report and passed test are required. The final grade is determined by combining the results in the different parts of the examination.

## **Entry requirements**

The prerequisites for admission to the course are English B and knowledge equivalent to FYS31 Physics 3, modern physics, 30 credits.

## Subcourses in ASTM20, Astronomy: Planetary Systems

Applies from H13

- 1301 Handins, 2,5 hp  
Grading scale: Fail, Pass
- 1302 Take-home Exam, 1,0 hp  
Grading scale: Fail, Pass
- 1303 Project and Presentation, 4,0 hp  
Grading scale: Fail, Pass, Pass with distinction

Applies from H09

- 0901 Planetary Systems, 7,5 hp  
Grading scale: Fail, Pass, Pass with distinction