



PHYSICS

ASM480 The Interstellar Medium and Star Formation, 7.5 higher education credits

The Interstellar Medium and Star Formation, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Physics on 2007-06-20 and was last revised on 2017-06-13 to be valid from 2017-06-13, spring semester of 2017.

Field of education: Science 100%

Department: Physics

Position in the educational system

The course ASM480 is a programme course in the Physics Master Programme, as well as a single subject course at University of Gothenburg.

The course is replacing the course AS3800 and the two courses can not be counted together in a diploma.

The course can be part of the following programmes: 1) Complex Adaptive Systems, Master's Programme (N2CAS), 2) Physics of Materials and Biological Systems, Master's Programme (N2PMB) and 3) Physics, Master's Programme (N2PHY)

Main field of studies

Physics

Specialization

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

Entry requirements

To be eligible for the course ASM480 the student needs knowledge in mathematics and physics (including basic electromagnetism and spectroscopy/quantum physics) equivalent to a Bachelor's degree. Applicants must prove knowledge of English: English B level or English proficiency equivalent to IELTS 6.5 no part under 5.5 or TOEFL 575 p, TWE score 4.5 is also required.

Learning outcomes

After having taken "The Interstellar Medium and Star Formation" the student should be able to:

- describe observations of the interstellar medium in different parts of the electromagnetic spectrum
- explain how physical and chemical concepts are used to understand the various forms of interstellar matter
- understand and use numerical models of interstellar matter
- describe the current theory for the formation of stars and planets and some of its observational tests

Course content

The aim of the course is to provide the students with a description of our current knowledge about the physics and chemistry of the interstellar medium and the processes by which stars and planets form. Some of the items that will be discussed in detail are:

- Overview of interstellar matter across the electromagnetic spectrum
- Multi-phase interstellar medium. Gas and dust content of the Galaxy
- Nebular spectra of active galactic nuclei and quasars
- Photoionized nebulae
- Sophisticated nebular modelling, including computer models
- Molecular clouds: physics of H₂ and CO molecules, interstellar chemistry
- Initial conditions for the formation of stars
- Formation of stars: Protostellar collapse, formation of disks, outflows, chemical evolution of protostars and young stellar objects
- Interstellar gas dynamics
- Planet formation in the context of the star formation

Form of teaching

The course includes lectures and exercises.

Language of instruction: English

Assessment

The examination is in form of a written exam plus compulsory homework.

A student who has failed a test twice has the right to change examiner, unless weighty argument can be adduced. The application shall be sent to the board of the department and has to be in writing.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

Course evaluation

The results of the evaluation will be communicated to the students and will function as a guide for the development of the course.

Additional information

The course is given jointly with Chalmers University of Technology. The Chalmers code for the course is RRY040.