

SYLLABUS

Space Plasma Physics 7.5 credits F7001R

Rymdplasmafysik

Course syllabus admitted: Autumn 2023 Sp 1 - Present

**DECISION DATE
2021-02-16**

Space Plasma Physics 7.5 credits F7001R

Rymdplasmafysik

Second cycle, F7001R

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Rymd- och atmosfärsvetenskap	Space Technology

Main field of study

Space Technology

Entry requirements

Knowledge in the area of plasma physics, for example F7010R Plasma physics, or Space physics for example R7017R Space Physics or equivalent.

Good knowledge in English equivalent to English 6.

Selection

The selection is based on 30-285 credits

Course Aim

The course shall introduce to specific aspects in plasmaphysics related to the Solar system and space environment. After finishing the course, the students shall be able to demonstrate basic knowledge about plasma in the solar system and how the plasma environment in the Sun and the Solar system interacts with the various electro-magnetic fields in the Solar system and around the planets. This is shown by the ability to describe interactions between plasma and magnetic fields of the Earth and planets. The students shall be able to describe related processes, e.g. formation and properties of aurora.

The students shall be able to calculate and estimate the magnitude of typical plasma related processes in the Solar system. After the project work, the student shall be able to show their utilization of the course contents for judgement and/or analysis of space physical phenomena, critically select and evaluate relevant scientific and technical information within the subject via literature survey/studies of scientific papers, and demonstrate social skills needed to effectively work in a group during the project work.

Contents

The space plasma physics of the ionosphere, magnetosphere, the sun and the solar wind, the interactions between them, and the results of these interactions such as the Aurora is at the focus. Collisionless shocks, plasma instabilities, the magnetohydrodynamics of the Sun, solar wind interactions with magnetised and non-magnetised planets, magnetospheric physics of the planets in our solar system, auroral physics, magnetospheric storms and substorms.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures and project. Depending on the circumstances, a different realization of the course can be required. Parts of the lectures may be implemented using hybrid/blended education methods (online, videos, etc).

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Written exam, assignments and project work. The project work is examined through a report. To pass the course, all modules of the course shall be passed.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Overlap

The course F7001R is equal to RYM009

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0007	Assignments and project	U G#	2.5	Mandatory	A21	
0008	Written exam	G U 3 4 5	5	Mandatory	A21	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Jonny Johansson, HUL SRT 2021-02-16

Syllabus established

The course plan was accepted by the Dept of Space Science 2007-02-28 and remains valid as from H07.