

SYLLABUS

Climate Physics 7.5 credits

F7011R

Klimatfysik

Course syllabus admitted: Autumn 2024 Sp 1 - Present

DECISION DATE
2024-02-15

Climate Physics 7.5 credits F7011R

Klimatfysik

Second cycle, F7011R

Education level
Second cycle

Grade scale
G U 3 4 5

Subject
Rymdteknik

Subject group (SCB)
Space Technology

Main field of study

Space Technology

Entry requirements

Basic knowledge in mathematics like M0047M, M0048M, M0049M and M0055M and physics like F0004T, F0005T, and F0006T or equivalent. Courses in technical mechanics F0059T, Mechanics II Ry F0055T and Atmospheric physics F7004R or equivalent. Knowledge in English, equivalent to English 6.

Selection

The selection is based on 30-285 credits

Course Aim

Many space borne instruments are used to observe the Earth's atmosphere and the climate system. After the course the student should understand the basic physical principles driving the Earth's climate. The student should be able to describe how different components of the climate system react on changes and how the climate system reacts on changes in these components. After the course the students should know how climate processes can be described how they can be used in climate models.

The student shall be able to describe and analyse different climate parameters, their variability and sensitivity. He/She should be able to handle climate data, visualize them and apply different methods for analysis.

The students shall be able to discuss parameters and data related to climate processes considering correlations between various parameters. They should be able to present analysis and results within the frame of the given exercises.

Contents

Components of the climate system, radiation balance, atmospheric dynamics and thermodynamics, energetics, Exchange processes, climate variability, modeling the climate system, climate observation, climate change.

Realization

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

The course consists of classical lectures, combined with homework problems for the students. In parallel the students will work with a climate model and do their own climate sensitivity project. Upcoming public discussions and new findings and observations are discussed.

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.

The course is assessed through written tests, written assignments and a project work. In order to pass the course it is required that all compulsory tasks are completed satisfactory with a grade "Pass".

The final grade for the course reflects the results obtained for all compulsory tasks and is given after all compulsory tasks are approved.

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 F7011R is equal to F7002E

The course replaces F7002E Atmospheric Dynamics and Climate

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0009	Written tests	G U 3 4 5	3	Mandatory	A24	
0010	Assignment report	G U 3 4 5	3	Mandatory	A24	
0011	Project work	G U 3 4 5	1.5	Mandatory	A24	

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 Robert Brännström 2024-02-15

Syllabus established

by The syllabus was accepted by the Department of Space Science 2010-03-01