SYLLABUS

Remote Sensing 7.5 credits
R7012R

Fjärranalys

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2021-02-16

LULEÅ
TEKNISKA
UNIVERSITET

Remote Sensing 7.5 credits R7012R

Fjärranalys

Second cycle, R7012R

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

General entry requirements, second cycle.
15 hp in matematics, for example: M0047M - Calculus, M0048M - Linear Algebra and Calculus, M0049M - Linear Algebra and Differential Equations, M0055M - Functions of Several Variables, or equivalent.
15 hp in physics, for example: F0004T - Pysics 1, F0005T - Pysics 2, F0006T - Pysics 3, F0007T- Electromagnetic field theory, or equivalent.
F7004R - Atmospheric Physics, or equivalent..

Knowledge in English, equivalent to English 6.

Selection

The selection is based on 30-285 credits

Course Aim

After completion of the course, the students should be able to:

- Describe and explain the physical background of selected remote sensing methods used in geosciences
- Apply the physical principles in a quantitative way and perform simulations of remote sensing measurements for largely simplified cases
- Apply selected retrieval methods to analyse measurements and solve remote sensing problems under simplified conditions/assumptions
- Evaluate the requirements posed by a given measurement task/request, analyse the capabilities and limitations of known remote sensing methods to solve that task, and suggest an appropriate observation method/setup
- Discuss and critically evaluate proposed remote sensing solutions

Contents

- Motivation, why do we need remotely sensed data?
- Radiation, radiative transfer, interaction of radiation with matter,
- Data analysis, retrieval methods,
- Measurement geometries, Orbits,
- Passive techniques; passive microwave observations, thermal infrared observations, visible/near infrared observations. Satellite image classification
- Active techniques; Radar, Lidar

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. Solutions of the homework problems are discussed in tutorial classes, peer teaching is used.

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 grade will be determined by the student's written home work assignments. Additionally, an individual assessment of the participation during the discussions of the assignments will be considered.

The final grade considers all parts of the examination and will be decided when all obligatory elements are fulfilled.

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 R7012R is equal to R7006R

R7006R

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0004	Assignment reports	G U 3 4 5	7.5	Mandatory	A19	

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

LULEÅ
TEKNISKA
UNIVERSITET

Syllabus established

by Dept of Space Science 2008-12-10

LULEÅ
TEKNISKA
UNIVERSITET