

Syllabus

for course at advanced level

Remote Sensing in Atmosphere and Ocean
Fjärranalys i atmosfär och hav

**7.5 Higher Education
Credits**
7.5 ECTS credits

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|--------------------------|---|
| Course code: | MO8008 |
| Valid from: | Autumn 2016 |
| Date of approval: | 2016-10-03 |
| Department | Department of Meteorology |
| Main field: | Meteorology |
| Specialisation: | A1F - Second cycle, has second-cycle course/s as entry requirements |

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University 2016-10-03.

Prerequisites and special admittance requirements

Knowledge corresponding to Atmospheric physics and chemistry, 30 credits (MO4000) or Meteorology I, 15 credits (MO8001) and Meteorology II, 7.5 credits (MO8002). English B/English 6 or equivalent.

Course structure

| Examination code | Name | Higher Education Credits |
|------------------|--|--------------------------|
| 7026 | Remote Sensing in Atmosphere and Ocean | 7.5 |

Course content

The course deals with remote sensing techniques and their application to the atmosphere and oceans. This includes the underlying physics, analysis methods, as well as the scientific and operational use of remote sensing data. Topics to be addressed are • atmospheric structure, composition and radiative transfer • passive remote sensing techniques such as radiometry, spectroscopy and occultation • active remote sensing techniques such as radar, lidar, sodar, DOAS and scatterometer • inversion methods, data analysis in atmosphere and ocean • methods for calibration, validation and quality control • applications of ground-based and satellite remote sensing for studies of e.g. temperature, composition, aerosol and cloud properties, precipitation, as well as the properties of sea surface and sea ice.

Learning outcomes

After attending the course the student should be able to: • explain the physical principles behind remote sensing techniques and the application of these techniques to atmosphere and ocean • identify suitable remote sensing techniques for a given task and motivate that choice; discuss limitations and uncertainties of measurement techniques and resulting datasets • based on results from remote sensing instruments, draw conclusions about processes in atmosphere and oceans

Education

The teaching consists of lectures, exercises and laborations. Participaton in laborations and the associated tutorials is compulsory. If there are special reasons, the Examiner may, after consulting the course teacher, allow the student to omit certain parts of the compulsory teaching.

Forms of examination

a) Examination is done by a written and oral presentations of laborations as well as a written test. If the teaching is in English, the exam may also be in English. b) Grading is done on a seven-step scale: A=excellent B=Very good C=Good D=Satisfactory E=Sufficient F=Unsatisfactory Fx=Entirely unsatisfactory. c) The grading criteria are handed out at the beginning of the course. d) For passing the course, at least grade E is required, as well as participation in compulsory teaching. e) Students that do not pass the regular test have a right to attempt at least four further tests as long as the course is given. As "tests" are understood also other compulsory parts of the course. Students that have passed a test are not allowed to attempt another test in order to receive a higher grade. Students that have failed an examination twice have a right to demand that another teacher is appointed to determine the grade. The request for this should be directed to the Board of the department. The course has at least two examinations for each part per academic year the year of tuition given. Intermediate years are given at least one examination. f. At Fx can be given the opportunity to complete up to grade E. The examiner decides which supplementary tasks to be performed and which criteria to apply in order to pass on the supplement. The addition should take place before the next examination.

Interim

Students may demand that the examination is performed according to this syllabys even after it has ceased to be valid. However, this may be done at most three times during the two years after the course was last given. The request for this should be directed to the Board of the department.

Limitations

The course can not be included in a degree with Remote sensing in atmospheric science and oceanography (MO7018) or equivalent.

Misc

The course is a part of the Master's programme in Meteorology, Oceanography and Climate, but may also be taken as a separate course.

Required reading

The course literature is decided by the Board of the department, and published at the website of the Department of Meteorology (MISU) at least 2 months before the course start.