

Syllabus

for course at advanced level

Cloud Micro- and Macrophysics
Molnfysik på mikro- och makroskala

**7.5 Higher Education
Credits**
7.5 ECTS credits

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|--------------------------|---|
| Course code: | MO8011 |
| Valid from: | Autumn 2017 |
| Date of approval: | 2017-03-13 |
| 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 Science at the Faculty of Science, at Stockholm University 2017-03-13.

Prerequisites and special admittance requirements

Knowledge corresponding to Atmospheric Physics and Chemistry, 30 HECs (MO4000), or Meteorology I, 15 HECs (MO8001) and Meteorology II, 7.5 HECs (MO8002). Also required is knowledge equivalent to English B/6.

Course structure

| Examination code | Name | Higher Education Credits |
|------------------|-------------------------------|--------------------------|
| 8011 | Cloud Micro- and Macrophysics | 7.5 |

Course content

This course covers cloud formation from both micro- and macro perspectives. The content is:

- formation and chemical composition of cloud and ice condensation nuclei
- activation of cloud and ice condensation nuclei to cloud droplets and ice crystals
- precipitation processes
- large scale conditions for cloud formation
- interaction between clouds and condensation nuclei with radiation
- observational techniques on the micro- and macro scale
- parameterisation of clouds in numerical weather forecast and climate models.

Learning outcomes

After the course, the student is expected to be able to:

- explain cloud and precipitation formation on the micro and macro scales
- discuss the role of chemistry for cloud formation
- give examples of methods used in the study of clouds and discuss their benefits and limitations.

Education

The teaching consists of lectures, exercises and laborations. Participation in laborations and the associated group 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 test.
- b) Grading is done on a seven-step scale: A = Excellent B = Very good C = Good D = Satisfactory E = Sufficient Fx = Failed, some more work is required F = Failed, a lot more work is required.
- 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 passed written presentations of laborations and participation in all compulsory teaching.
- e) Students that do not pass the regular test have the right to take further tests as long as the course is given. The number of tests is not limited. 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, for a course and part of a course, have the right to request that another Examiner is appointed, unless special reasons speak against this. The request for this should be directed to the Board of the department. The course has at least two examination occasions per academic year the years teaching is given. Intermediate years at least on examination occasion is given.
- f) A student who receives grade Fx has the opportunity to do additional work in order to reach grade E. The Examiner decides what additional work is required and the criteria to pass. The additional work should be performed prior to the next examination occasion.

Interim

Students may demand that the examination is performed according to this syllabus even after it has ceased to be valid. However, this may be done no more than three times during a two-year period after the course was last given. The request for this should be directed to the Board of the department.

Limitations

The course may not be included in a degree together with Meteorology, 20p (ME1170), Cloud Micro- and Macrophysics, 7.5p (MO7009) or equivalent.

Misc

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

Required reading

The course literature is published on the Department of Meteorology's website at least two months prior to course start.