

# Syllabus

for course at first level

**Thermodynamics of the Atmosphere**  
**Atmosfärens termodynamik**

**6.0 Higher Education**  
**Credits**  
**6.0 ECTS credits**

Course code:	MO3003
Valid from:	Spring 2008
Date of approval:	2007-12-21
Department	Department of Meteorology
Subject	Meteorology

## Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University.

## Prerequisites and special admittance requirements

Knowledge corresponding to Thermodynamics and Statistical Physics, 7,5 HEC (FK4008) and Mathematical Analysis III, 7,5 HEC (MM5001).

## Course structure

Examination code	Name	Higher Education Credits
3003	Thermodynamics of the Atmosphere	6

## Course content

This course deals with the vertical structure of the atmosphere and the physical relations that explain it. The starting point is the general gas law and the properties of ideal gases. Transfer between work, internal energy and external heat sources/sinks is investigated with the help of classical physics. Further subjects treated are evaporation, condensation and freezing of water, which largely determine the temperature variations in the atmosphere.

## Learning outcomes

After taking this course the student should be able to:

- account for the vertical structure of the atmosphere and the physical relations that explain it
- explain the role of water vapor in atmospheric energy transformations
- apply physical laws to thermodynamic problems in the atmosphere and ocean

## Education

The teaching consists of lectures, demonstrations and exercises. Participation in demonstrations 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/or oral test. 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 passed oral and/or written presentations of laborations and 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.

#### **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 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 may not be included in a degree together with Meteorology (ME1170) or Meteorology I (MO8001).

#### **Misc**

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

#### **Required reading**

The course literature is decided by the Board of the department, and is then presented in an attachment to the course syllabus.