1. Study programme for the
Master of Science in Atmospheric Sciences and Biogeochemical Cycles, 120
Higher Education Credits, at Lund University

The study programme was approved by the Board of the Faculty of Science on 7 February 2007, in accordance with the Higher Education Ordinance 1993:100 (amend. 2006:1053). The syllabus comes into effect on 1 July 2007.

Ladok code:

2. Programme description
The programme aims to provide students with the opportunity to acquire detailed and systematic understanding of phenomena and processes in the atmosphere and in the boundary layer between the atmosphere and the biosphere. Students shall also acquire the ability to independently develop innovative solutions to complex problems within the area of the environment and climate change. The programme includes inter-disciplinary studies in Physics, Chemistry, Meteorology, Physical Geography and Ecology, making it possible to find employment in the public and private sectors, both nationally and internationally. Additionally, the programme should be a preparation for third level studies within this field.

3. Learning outcomes
Based on the learning outcomes stated in the Higher Education Ordinance 1993:100 (amend. 2006:1053) appendix 2, for a degree of Master of Science in Atmospheric Sciences and Biogeochemical Cycles, students shall have acquired in-depth knowledge and understanding of:

- processes in Aerosol Physics and Atmospheric Physics
- processes in Micrometeorology
- the biogeochemical cycles of carbon and other greenhouse gases,
- processes that control the condition and flow of mass and energy in the ground-vegetation-atmosphere system, particularly in the interaction between the surface of the earth and the atmosphere,
- computer, field and laboratory based methods for the analysis of atmospheric and biogeoospheric processes
- working in a scientific context,
- knowledge of and insight into issues of equality and diversity in science and in the global community.

Additionally, students shall have acquired the ability to:

- integrate knowledge for analysing and solving new and unknown problems within the area of climate change, on the basis of the scientific context of the atmosphere and biosphere,
- assimilate summarised and synthesised information from different sources,
- structure and compile information and empirical material,
- evaluate information from different sources,
- design and plan research, development and investigative activities,
– assess societal measures for managing the problems caused by climate change,
– design hypotheses and scenarios based on complex information,
– use and assess relevant spatial and temporal scales when analysing different processes and relationships,
– choose and apply pertinent methods for analysing different processes and relationships,
– assess, reflect on and critically review literature within the subject field,
– present conclusions, including the underlying knowledge and logical grounds for these conclusions, to subject specialists and laymen,
– disseminate knowledge in an advanced, structured and logical manner,
– produce written material and carry out high quality oral presentations,
– hold a dialogue with subject specialists and laymen,
– use their skills and knowledge in different forms of teamwork, and to have understanding and respect for different opinions and points of view,
– make assessments with regard to the relevant scientific, societal and ethical aspects, as well as demonstrating awareness of the ethical aspects of research and development work,
– study and work in a self-supervised and independent manner,
– search for information, both nationally and internationally.

4. Course Information
The programme is run in co-operation between:
– Lund University (the Department of Physical Geography and Ecosystems Analysis and the Physics Department)
– The University of Copenhagen (Department of Chemistry, Department of Geography, Department of Physics),
– Göteborg University (Department of Plant and Environmental Sciences),
– University of Helsinki (Department of Physical Sciences),
– University of Kuopio (Department of Physics and the Department of Environmental Science).

Courses are primarily given in the following fields of study:
– Aerosol Physics
– Atmospheric Chemistry
– Micrometeorology
– Ecosystems Analysis
– Biogeophysics
– Biogeochemistry.

Courses in Research Methodology, Advanced Statistics and Scientific Communication are also included.

The programme finishes with a degree project of at least 30 higher education credits.

Students are to choose one of two main specialisations:
- Atmospheric Science,
- Biogeochemical Cycles

Both specialisations have a joint compulsory course package of at least 15 higher education credits that includes:
– Seminar in Aerosol and Environmental Physics,
– Earth System Science from an atmospheric perspective,
– Introduction to Atmospheric Chemistry and Aerosol Physics,
– Environmental measurement techniques: fluxes and states in terrestrial ecosystems.
Students specialising in biogeochemical cycles must study courses at the second level worth at least 30 higher education credits in the areas of Ecosystems Analysis/Biogeophysics.

Students may choose between a large number of courses at the different departments that are part of the programme.

The course offers on-campus and field courses, as well as Internet-based courses.

5. Degree Requirements
The general degree requirements for the Master’s Degree are regulated in the Higher Education Ordinance 1993:100 (amend. 2006:1053) appendix 2 and in the local degree rules at Lund University from 18 December 2006.

The programme comprises 120 higher education credits, including a degree project of 30 – 60 higher education credits. For the degree to be awarded by Lund University at least 45 higher education credits must have been taken at Lund University and studies shall have been carried out at at least two universities in the network. Student who have completed the programme with approved results and who have been awarded a first level degree of 180 higher education credits fulfil the requirements of the Master’s degree.

The degree title (in Swedish) is ‘Naturvetenskaplig masterexamen’. The English translation is Degree of Master of Science.

The Major area of Atmospheric Science and Biogeochemical Cycles is stated on the degree certificate in association with the degree title.

6. Admission Requirements and Selection Criteria
The admission requirements and selection criteria for admission to higher education at the first level are regulated by the Higher Education Ordinance 1993:100 (revision 2006:1053) and in the Local Admission Ordinance for Lund University from 18 Dec 2006.

A scientific first level degree in Physical Geography or Physics or the equivalent, comprising at least 180 higher education credits, is required for admission to the programme. There are specific admission requirements for individual courses on the programme.

Additionally, the following requirements for special eligibility as regards English apply to non-Nordic students who do not have English as their mother-tongue: an internationally recognised English test, such as TOEFL (at least 550 / 213), IELTS (at least 6.0) or the Cambridge Certificate of Proficiency.

When selecting among eligible applicants, grades and other merits such as letters of recommendation and the applicant’s “Statement of Purpose” will be taken into account.

7. Other Information

Transitional provisions:
The Faculty Board may decide on the discontinuation of a programme or major and may also decide, in association with this, on transitional provisions for students who have started these degree programmes.

Grades and examinations:
Rules pertaining to grades and examination are stated in the course syllabi approved by the Faculty Board.