Physics of the Atmosphere						
Type of Module Basic Module			**Module Code** BM-METPHAT			
Identification Number MN-GM-METPHAT	**Workload** 180 h	**Credit Points** 6 CP	**Term** 1. – 3. Semester	**Offered Every** WiSe	**Start** Winter Term Only	**Duration** 1 Semester

1	**Course Types**	**Contact Time**	**Private Study**	**Planned Group Size**
	a) Lectures	45 h	45 h	15
	b) Exercise	30 h	60 h	

2 Aims of the module and acquired skills

- Derivation and interpretation of equations governing atmospheric motion and state, i.e. primitive equations
- Atmospheric radiation and application to the energy balance (e. g. greenhouse effect) and optical appearences
- Knowledge of the earth's climate zones and basic principles of the general circulation
- Acquired skills are computer practice, presentation techniques, general comprehension of systems, critical assessment and discussion of scientific work and time management.

3 Contents of the module

- Meteorological variables and primitive equations
- Composition and spatio-temporal structure of the atmosphere
- Radiative transfer
- Cloud physics and formation of precipitation
- Atmospheric boundary layer and turbulence
- Atmospheric dynamics
- Weather systems
- Atmospheric circulation
- Climate dynamic

4 Teaching Methods

Lectures and Lectures and exercises - Exercises with compulsory attendance (exercises require attendance)

5 Prerequisites (for the Module)

Formal: Permission by the Examination Board

With regards to content: Basics of mathematics and physics.

6 Type of Examination

Written examination (graded).

7 Credits Awarded

Successful participation in the exercises (50 % of the possible points have to be obtained) and passing of the examination.

8	**Compatibility with other Curricula** • Other modules of equal value can be admitted and announced by the examination board after agreement. • Suitable as an elective course for mathematics, physics and geoscience students
9	**Proportion of Final Grade** 6/114
10	**Module Coordinator** S. Crewell
11	**Further Information** **Recommended Literature:** Wallace, J. und Hobbs, P., 2006: Atmospheric Science: An Introductory Survey. Academic Press, 2nd edition, New York. H. Kraus, 2005: Die Atmosphäre der Erde. Eine Einführung in die Meteorologie. Springer Verlag Heidelberg, Paperback Vieweg Verlag. D. Etling, 2002: Theoretische Meteorologie, Eine Einführung. Springer Verlag Heidelberg.