Level: master

Course title: Applied meteorology

Status: obligatory

ECTS: 4

Requirements: seminar paper

Learning objectives

Students are expected to upgrade their knowledge about spatial and temporal scales of atmospheric processes and its variations. Deeper insight into processes of synoptical and local scales, energy and water balance of organism, seasonal and climate changes and their impact. Graduate students are prepared for practical application and further improvement of their expertise.

Learning outcomes

After the course, master students should have obtained the basic knowledge in physiology, ecology and biometeorology. They are able to understand and apply different methods of atmospheric processes and processes describing atmosphere-biosphere interaction. In addition, students are able to use numerical models and different meteorological databases. Everything that allows them to apply for position in research institutes and advisory services related to meteorology, agriculture, and environmental monitoring and protection. Finishing the master studies provides the students with a good background for further PhD studies.

Syllabus

Theoretical instruction

Climate factors and energy balance of organism. Shortwave radiation. Longwave radiation. Calculation of leaf temperature. Atmospheric humidity and precipitation. Interception. Transpiration. Evaporation from vegetated surfaces. Photosynthesis. Diffusion within forest canopy. Wind and turbulence. Turbulent transfer within PBL. Wind flow above vegetation. Wind flow within tall vegetation. Basic equations of turbulent flow. Mixing length.

Standard and urban atmosphere. Energy and water balance of urban atmosphere. Microclimate of urban layer. Climate of urban boundary layer. Urban energy balance and urban climate feedback. Models of urban atmosphere.

Practical instruction

Description of urban surfaces scheme. Setup and application.

Weekly teaching load				Other:
Lectures: 2	Exercises: 3	Other forms of teaching:	Student research:	