

<b>Level:</b> bachelor
<b>Course title:</b> Introduction to meteorology II
<b>Status:</b> obligatory
<b>ECTS:</b> 8
<b>Requirements:</b> none
<p><b>Learning objectives</b></p> <p>Students should get fundamental knowledge about processes in atmosphere and impact of weather and climate on environment. Main aim of this course is to make students familiar with mechanism of turbulence in atmosphere, general and thermal circulation, general concepts about climate (classification) and urban climate, climate changes and atmospheric pollution. After graduation, students are well educated and ready to use skills in practice, they become expert for various fields of meteorology with high level of understanding of essential processes in atmosphere, seeking for new approaches.</p>
<p><b>Learning outcomes</b></p> <p>Experts with academic knowledge in meteorology and climatology with upgraded high school knowledge in geography and physic. Students have the ability to understand and analyze processes in the Earth-atmosphere system and to present results of the research to other colleagues and wide audience. In addition, students acquire skills to use known solutions for new problems and to understand mathematical and numerical methods in environmental modelling. They are qualified to work in various scientific institutes, agricultural institutes and institutes for monitoring and environmental protection, with the ability for independent work and further improvements.</p>
<p><b>Syllabus</b></p> <p><i>Theoretical instruction</i></p> <p>The wind and the air flow kinematics. Wind at the Earth's surface. The influence of obstacles on the wind. Wind protective forest belts. The pressure gradient force. The forces resulting from movement of air. Geostrophic and gradient wind. Turbulence in the atmosphere. Mechanism of turbulence. Border layer and changes in wind speed with height. Determination of turbulent fluxes in the border layer. Vertical distribution of wind speed above and within the vegetation cover.</p> <p>Fronts and cyclones. Air masses and their movements. The transformation of air masses. Creation of fronts. Types of fronts. Cyclones. Anticyclones. Weather forecast.</p> <p>The local winds. The general circulation of the atmosphere. Thermal circulation in the atmosphere. Local winds in the form of heat circulation. Local winds conditioned by terrain. Slope winds. Air vortices. Dry wind. The general circulation of the atmosphere. The use of wind energy.</p> <p>The general terms of the climate. Division of climate (macroclimate, mesoclimate, Tago climate, microclimate). Climatic elements and factors. Climate modifiers.</p> <p>The impact of the Earth's rotation on the climate. The impact of land and sea on the climate. The influence of mountains on the climate. The influence of water basins on the climate. The impact of natural cover on the climate. The classification of climate. Introductory remarks on the classification of climate. Köppen climate classification. Thornthwaite climate classification. Mesoclimate. Climate of Yugoslavia. Climate of Vojvodina.</p> <p>Weather, climate, soil and plants. Weather, climate and plants environment. Microclimate and its elements. The influence of vegetation on microclimate (protection belts). The influence of water basins on microclimate. The influence of irrigation on the microclimate. Methods of protection against frost. Methods of protection against drought.</p>

Climate of urban settlements. Introductory remarks. The concept of the urban atmosphere. Energy and water balance in the urban atmosphere. The microclimate of urban covers. Climatic characteristics of the urban boundary layer. Types of models of urban atmosphere.

Climate changes. Introductory remarks. Paleoclimatology. Tasks and methods. Milankovic's theory. Models for the study of climate changes.

Man-made influence on the weather and climate. Pollution of the atmosphere. Natural and artificial aerosols. Gas pollution. Global pollution. The spread of contamination. Propagation of gaseous pollutants. Sand storms.

*Practical instruction:*

Exercises

<b>Weekly teaching load</b>				Other:
Lectures: 3	Exercises: 3	Other forms of teaching:	Student research:	