Basic course data	
Academic unit:	**University of Prizren „ Ukshin Hoti”** **Faculty of Life and Environmental Science**
Department	**Forestry and Environmental Sciences**
Program	**Forestry and Environmental Sciences**
Subject title:	**Meteorology**
Level:	**Bachelor**
Subject status:	**Compulsory**
Year of study:	**Second year,**
Number of hours per week:	**3+2**
Value in credits – ECTS:	**6**
Time / location:	**III semester**
Subject lecturer:	**Prof.Ass.Dr. Ylli Kortoçi**
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Description of the subject:	Meteorology is a branch of science that studies the atmosphere of planet Earth. More specifically, meteorology studies climate and weather. Climate, alongside land, as one of the components of the natural environment, exerts a continuous influence on the life processes of the living world in general, and forest vegetation in particular. Within the area of these bio-ecological relationships, the efficient utilization of the climatic properties of the territory in the benefit of the forestry production increment requires the recognition of the climatic conditions of each area, in relation to the biological requirements of forest plants. For this purpose, in the Meteorology module program for the Bachelor level of the students of the Department of Forestry, a whole set of concepts, principles and laws relating to solar radiation, thermal and atmospheric radiation are treated; the air and soil temperature; the humidity of the air and the evaluation units; the first products (mists, clouds) and the second condensation products (precipitation); the speed and direction of the wind; dynamic meteorology, climatic factors and climatic systems, microclimate, phytoclimate, mountain climate, and the climate of Kosovo. The program comprises a brief description of the components of solar radiation, the thermal radiation of the earth and the atmosphere, the energy balance on the surface of the earth, and equations are provided for the evaluation of the components of solar and thermal radiation.

	Air and soil temperature changes in response to the radiant, thermal and latent energy exchange processes, the spread of the impacts of these phenomena in the air and soil profile by a series of transport processes (thermal exchange, convection, thermal radiation), whose rhythm depends on the thermal properties of air and soil, are problems addressed in this teaching curriculum. The curriculum contains a summary of knowledge on evaporation, condensation and water vapor dispersion processes in the atmosphere as well as tables and scale equations that characterize the air humidity content in the atmosphere. It contains knowledge on the conditions and mechanisms of rainfall formation in the atmosphere, on the types and quantitative characteristics of precipitation and the way of calculating efficient rainfall. The knowledge on spectrum analysis and spatial distribution of precipitation has an important place. A special place in the program is dedicated to the wind as meteorological element. Also, air circulation in the atmosphere is also treated (air masses, atmospheric fronts, cyclones and anticyclones), as well as the meaning of weather and its forecast. Climate meaning, microclimate, phytoclimate and mountain climate; climate-forming factors; climate systems and climate classification criteria; the factors that determine the climate of Kosovo and climatic zones of our country, have an important place in this curriculum. The practical part of the curriculum contains most necessary lab work, for a deeper understanding of the most basic notions and principles of Meteorology, methods of analysis and processing of experimental data, as well as practical training of students in the use of meteorological equipment and knowledge of their characteristics. Also, each lab work contains other materials (control questions, written questions, checklist questions) related to a realistic and systematic assessment of the students in such a way, to help not only the active and sustainable acquisition of teaching knowledge, but also to encourage them the passion of permanent reading and studying. The Meteorology Program for Bachelor degree is designed so that students who want to pursue the further course of study at the level of professional and scientific Master degree in forestry profiles be capable of applicable scientific approximations. The aspects of laboratory practices and seminars included in the program create genuine bases for

	group and individual research. The aim of this curriculum is to enable and help the students, through meteorological concepts formulation and treatment methods and equipment, to solid masters on forestry science, to provide them equipment with knowledge and concepts that help them in their further education, training and further employment in other technical areas related to forestry.
Subject objectives:	• Air vertical structure and composition description and the difference between the weather, climate, and the weather forecast; • Explanation of how solar, earth and atmospheric radiation "pumps" energy into the atmosphere; • Description of temperature and air pressure measurement and the explanation of change causes of these meteorological elements in the atmosphere; • Knowing the implications of water's ability to exist in gaseous (liquid steam) liquid and solid (ice crystals) conditions near the earth surface within a small interval of temperature and air pressure change; • Understanding the natural hydrological water cycle in the atmosphere and explaining the main causes of fog formation, clouds and precipitation (rain, snow, hail); • Demonstrating the causes of wind formation, and how it is valued; • List of types and causes of air masses formation; • Description of the weather events related to the warm and cold atmospheric front; • Recognition of cyclones and anticyclones impact in the weather type; • Recognition of computer techniques, as well as reading and interpreting synoptic charts for weather forecasting; • Understanding climate change caused by natural and human causes.
Expected learning outcomes:	Upon completion of this course the student must be able to: • Describe and transmit a set of basic meteorological knowledge, concepts and principles, with an emphasis on their understanding and practical implementation in forest systems, with the aim of forming the theoretical basis needed for acquisition of many other disciplines of the study program at the Bachelor level of Forest Department students; • Recognize the meteorological elements, processes and mechanisms that govern or affect the weather and climate; • Possess practical training in the use of meteorological equipment, in conducting experiments, in the presentation of results and in error measurement.

Contribution to student load (which should correspond to student learning outcomes)			
Activity	**Hours**	**Days/weeks**	**Total**
Lectures	3	15	45
Theoretical / laboratory exercises	2	15	30
Practical work			
Contacts with the lecturer / consultants	6/semester	-	6
Field trips			
Colloquiums, seminars	2/semester	-	2
Individual tasks	6/semester	-	6
Student individual study time (in library or at home)	4	15	60
Final Preparation for examination	6/semester	-	6
Time spent in assessment (tests, quiz, final exam)	6/semester	-	6
Projects, presentations, etc.	7/semester	-	7
Total			180 hours

Teaching methodology:	Lectures, discussions, laboratory exercises, expeditions consultations, seminars, independent projects, homework assignments, colloquium, course assignments, exams.
Assessment methods:	First assessment (colloquium): 15%, Seminars or other engagements: 10%, Regular attendance: 5%, Final exam: 70%, Total: 100%.
Means of concretization:	Computer, projector, table, laboratory equipment, etc.
Literature:	
Basic literature:	Spiro Grazhdani. 2010. Punë Praktike në Fizikë-Meteorologji. Shtëpia botuese: REDONA PUBLISHIND, 344 f.
Additional Literature	Spiro Grazhdani. 2005. Praktikumi i Agrometeorologjisë. Shtpia botuese: erikbotime, 309 f. C. Donald Ahrens. 2009. Meteorology Today: An Introduction to Weather, Climate, and the Environment, 9th Edition. Brooks/Cole, CengageLearning, 599 pp. Frederick K. Lutgens, Edward J. Tarbuck, Dennis G. Tasa. 2015. The Atmosphere: An Introduction to Meteorology, 13th edition. Prentice Hall, 528 pp. James Holton & Gregory J Hakim . 2012. An Introduction to Dynamic Meteorology, 5th Edition. Academic Press, 552 pp. John Marshall. 2008. Atmosphere, Ocean, and Climate Dynamics, 8 edition. Academic Press, Inc., 319 pp. Roger G. Barry. 2009. Atmosphere, Weather and Climate - 9th edition. Routledge N. Y., 399 pp.

• **Designed learning plan:**	
• **Week**	• **Lectures to be developed**
First week:	Atmosphere
Second week:	Sun radiation and its components
Third week:	Terrestrial and atmospheric radiation
Fourth week:	Soil temperature
Fifth week:	Air temperature
Sixth week:	Atmospheric moisture
Seventh week:	Atmospheric condensation
Eightth week:	Dynamic meteorology
	First intermediate evaluation
Nineth week:	Circulation of atmosphere
Tenth week:	Mountain meteorology
Eleventh week:	Weather forecasting
Twelveth week:	Computational methods for meteorology
Thirteenth week:	Climate
Fourteenth week:	Climate of the Kosovo
Fifteenth week:	Climate changes
	Second intermediate evaluation

Designed learning plan- Exercises:	
Nr.	**Laboratory exercises to be developed**
1.	General Instructions
2.	Lab: Measurement of atmospheric pressure by barometers
3.	Lab: Measurement of atmospheric pressure by
4.	Lab: Measurement of soil and air temperature by thermometers
5.	Lab: Measurement of soil and air temperature by thermograph
6.	Lab: Measurement of air humidity by Assmann psychrometer
7.	Lab: Measurement of air humidity by hygrometers and hygrograph
8.	Intermediate exam 1
9.	Lab: Wind measurement
10.	Lab: Precipitation measurement: Pluviometer, pluviograph.
11.	Lab: Measurement of sunshine duration
12.	Lab: Measurement of solar radiation
13.	Lab: Estimating evapotranspiration of reference plants and plant coefficients
14.	Intermediate exam 2
15.	Practice on climate changes

Academic policies and courtesy rules:
Regular and active participation of students in lectures, exercises (practical part) and in seminar work. Keeping quiet in lecture, disabling mobile phones, timely access to the classroom, etc.