

**56S1-METEIKL**

**METEOROLOGY AND CLIMATOLOGY**

**ECTS: 4.0**

**HOURS PER SEMESTER/WEEK:** LECTURES: 15/1; CLASSES: 30/2

**FIELD OF THE STUDY:** Environmental protection

**Level of study:** First-cycle (Engineer's degree) program

**Course status:** obligatory \*

**Year of the study:** I

**COURSE CONTENTS**

**LECTURES:** Sensitivity of the environment to weather conditions. Description of the atmosphere as an environment in which dynamic processes and phenomena that shape weather and climate take place. The layered structure of the atmosphere. The chemical composition of the air. Characteristics of gases in terms of their climatic and weather-forming role. Factors of the weather system: composition and structure of the atmosphere, solar radiation, energy conversions in the atmosphere, heat balances, the greenhouse effect, heat transport, thermodynamic equilibrium, phase changes of water in the atmosphere, pressure distribution, baric systems, circulation systems. Theory of general circulation, atmospheric masses and fronts. Synoptics - forecasting the weather. climate system. Climate system factors: external, internal and anthropogenic factors. Climate typology. Climates of the globe. Climate of Poland. Contemporary problems related to climate change. Shaping biometeorological conditions, classifications and zoning of bioclimate.

**CLASSES:** Field exercises at the weather station. Measurements and calculations in the field of irradiation and insolation. Measurements of air temperature and calculation of thermal characteristics. Measures and methods of air humidity determination. Precipitation measurements. Characteristics of types of clouds and their recognition. Determination of atmospheric pressure, practical applications of pressure characteristics for baric levelling. Wind measurements and characteristics. Synoptics - practical implementation of the forecast. Development of basic climatic characteristics. Development of bioclimatic indicators.

**EDUCATIONAL PURPOSE:** The aim of the course is to provide knowledge, skills and competences in the field of mechanisms of functioning of the climate and weather system necessary for the proper approach to tasks in the field of environmental protection, wherever this factor plays a significant role.

**LEARNING OUTCOMES**

**Knowledge.** The student has general knowledge of the full range of structures that make up the weather and climate system with an environmental role. Knows and interprets climatological and meteorological phenomena and processes in connection with the environmental role. It characterizes the main theses that make up modern biometeorology.

**Skills.** Recognizes and uses meteorological equipment, compares procedures used at a professional meteorological station. It organizes, verifies and analyzes the results of meteorological observations, analyzes the current weather situation and its forecast based on environmental monitoring data.

**Social competences.** The student is sensitive to weather and climate issues and competent in promoting solutions conducive to the improvement of the natural environment. It is focused on contemporary climate problems, the scope of knowledge is quite general, but sufficient for people who perform professional tasks that depend on the functioning of the atmosphere.

**TEACHING FORMS AND METHODS**

**Lectures.** Informative lecture with multimedia presentation

**Classes.** Auditorium exercises, field exercises

**FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES**

**Lectures.** Written exam - written (an open test, a set of questions) covering the content of the lecture, positive pass from 60% of correct answers.

**Classes.** Written test - positive pass from 60% of correct answers. Participation in the discussion - active participation in the discussion related to the subject of the exercises, Report - a report on the exercises with correctly performed and described tasks.

**BASIC LITERATURE**

1) O'Hare G., Sweeney J., Wilby R., "Weather climate and climate change", wyd. PWN , 2005; 2) Barry R. G., 2009, Atmosphere, Weather and Climate. Taylor& Francis. 3) Henderson-Sellers A., Robinson P.J., 1986, Contemporary Climatology. Longman. 4) Woś A., "Meteorologia dla geografów.", wyd. PWN W-wa, 2002 ; 5) Kożuchowski K., Meteorologia i klimatologia", wyd. PWN W-wa, 2005.

**ADDITIONAL LITERATURE**

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**THE TEACHER/TEACHERS CONDUCTING THE CLASSES:**

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