



Syllabus

Term: 2026/27/1

Subject name: Meteorology

Subject code: ENAFOTNA0501

Unit (Unit code) Institute of Geography and Earth Sciences (FOLDRAJZ)

Lecturer responsible for the course: Dr. GERESDI István

Requirement: Exam

Classes per week : 2/0/0

Classes per term:

Purpose of education:

Introductory lecture about meteorology. A qualitative, comprehensive description is given about a wide size scale of processes, from formation of cyclones to that of water drops falling out from the clouds.

Contents:

Week 1 Introduction, history of the meteorology

Week 2 Evolution and composition of the atmosphere. Vertical profile of the temperature in different layers of the atmosphere.

Week 3 Radiation balance of the Earth - atmosphere system. Factors affecting the short wave and long wave radiations.

Week 4 Basics physical laws about the atmospheric motions. Different types of atmospheric motions: geostrophic, gradient and cyclostrophic winds. Effect of surface friction on the atmospheric motion.

Week 5 Cloud and precipitation formation. Characteristics of the different types of precipitation.

Week 6 Global circulation in the atmosphere. Formation of Hadley's cell, polar fronts and jets.

Week 7 Observation of vapor content in the atmosphere; hydrological cycle; residence time of water in different water reservoirs; potential evaporation, aridity index.

Week 8 Weather of the tropics. Tropical monsoon. Characteristics and formation of tropical cyclones.



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Week 9 Characteristics of mid-latitude cyclones and anticyclones. Weather at cold and warm fronts.

Week 10 Effect of topography on the local weather. Foehn and bora; anabatic and katabatic wind; sea and land breezes.

Week 11 Characteristics of the thunderstorm, formation of gust front and tornados. Optical and electrical phenomena in the atmosphere (rainbow, halo, circle around moon, lightning).

Week 12 Observation of the atmosphere. Surface observation, radio sounding, remote sensing (radar and satellite). Forecast of weather.

Week 13 Presentation about a phenomenon that can be observed in the atmosphere.

System of examing and valuation:

Mid-semester works: Students have to choose an atmospheric phenomenon, and they have to prepare for an oral presentation about 5 – 10 minutes long about it. The date of the presentation is the 13th week of the semester.

The quality of the oral presentation about the selected atmospheric phenomenon is taken into consideration.

Passing a written test (at least 70%).

Bibliography:

1. Barry, Charley and Routledge: Atmosphere, Weather and Climate
2. Ahrens : Meteorology Today: An Introduction to Weather, Climate and Environment



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Bibliography: