



## Course title: General Meteorology

Form of teaching: lecture – 26 hrs., 2p. ECTS; practices – 26 hrs., 5 p. ECTS, total – 52 hrs., 7p. ECTS

Course completion requirements: lecture – final exam; practices – final test, project evaluation, evaluation of activity

Language of instructions: English

### 1. Short description, objectives:

Objective of the course is to provide basic information on processes creating weather conditions and climate, methodology of this subject, basic sources of data and present trends in meteorological research.

### 2. Prerequisites:

1. reading and writing in English,
2. basic knowledge on physics (kinematics, dynamics, optics, radiative processes)
3. basic knowledge on mathematics and statistics

### 3. Learning outcomes

W01 - understands complex atmospheric phenomena and processes in the atmosphere; knows basic zna podstawowe pojęcia i terminy w tym zakresie (14K-1A\_W01, 14K-1A\_W03)

W02 – understands the necessity of creation a knowledge on the atmosphere on the ground of empirical data and application of mathematical and statistical methods for her description (14K-1A\_W02, 14K-1A\_W12)

W03 - possess a knowledge about physics necessary for understanding phenomena and processes ongoing in the atmosphere (14K-1A\_W03, 14K-1A\_W05)

U02 - uses scientific literature on meteorology; understands simple scientific texts in English (14K-1A\_U06)

U07 – is able to formulate justified judgements basing on data from different sources as well as to critically analyse and select information especially from electronic sources ( 14K-1A\_U07)

K01 – is able to cooperate in the group, taking over different roles (14K-1A\_K01; 14K-1A\_K02)

K02 – perceives the possibility of using acquired skills in business practice (14K-1A\_K05)

### 4. Course description:

- 1) Laws of radiation, radiation of Sun, Earth and the atmosphere, radiation balance and heat balance at the Earth surface.
- 2) Thermodynamic of the atmosphere, vertical structure of the atmosphere, distribution of temperature and pressure with the altitude, thermodynamics laws, internal energy and its variability, adiabatic processes, hydrostatic balance.
- 3) Water course in the atmosphere, relative and absolute air humidity, processes related to phase changes, creation of clouds and precipitation, thermodynamical diagrams, conditional and convective instability.
- 4) Atmospheric motions, geostrophic flows, atmospheric pressure, gravity, pressure gradient, Coriolis force, geostrophic wind, changes of the wind with altitude, frictional force, turbulence.
- 5) Atmospheric optics
- 6) Electricity in the atmosphere



## 5. Course evaluation

Final exam (W01-W03) – 50% total score, (Exam can be taken by individuals who have passed practices),  
 the finale test for practices (W01-W03) – 30% total score,  
 projects evaluation (U07, K01) – 10% total score,  
 evaluation of activity (U02, U07, K02) – 10% total score.

## 6. Teaching methods

Teaching methods: lecture, multimedia presentations, discussion, work with the source material (book, article),  
 practical exercises single handed and in the team, auditorium.

## 7. Recommended reading list

- [1]. Kożuchowski K., Wibig J., Degirmendzić J., 2012, Meteorologia i klimatologia, PWN Warszawa, 322 p.
  - [2]. Linacre E., Geerts B., 1997, Climate and Weather Explained, Routledge, London and New York, p. 432 p.
  - [3]. Barry R.G., Chorley R.J., 1992, Atmosphere, Weather & Climate, Routledge, London and New York, 432 p.
- Iribarne, J.V., Cho H.R., 1980, Atmospheric Physics; D. Reidel, 285 p.