



Course title: Climatological databases

Form of teaching: practices - 13 hrs., 2 p. ECTS, **total - 13 hrs., 2p. ECTS**

Course completion requirements : practices - finale test, projects evaluation, evaluation of activity,

Language of instruction: English

1. Short description, objectives:

The objective of the course is to acquaint students with the resource of the available meteorological and climatological databases on the Internet as well as data visualization methods.

2. Prerequisites:

1. reading and writing in English,
2. basic knowledge on meteorology and climatology,
3. basics of statistical analysis of climatological data,
4. basic knowledge on MS Excel environment

3. Learnin outcomes

- W01 - understands complex atmospheric phenomena and processes (14K-1A_W01, 14K-1A_W03),
 W02 - consistently uses the rules of exact (based on empirical data) interpretation of the atmospheric phenomena and processes in the atmosphere during the investigations and practical applications (14K-1A_W02),
 W03 - possess a knowledge on researches planning with the application of the methods and techniques used in the meteorology and climatology (14K-1A_W05, 14K-1A_W07, 14K-1A_W09)
 W04 - possess a knowledge on computer science that allows managing of freely available climate data over the Internet (14K_1A_W07),
 W05 - understands the relationship between developments in the field of climatology and the possibilities of their use in the socio-economic life of man (14K_1A_W06, 14K_1A_W08),
 U01 - freely finds and uses the available sources of information over the Internet (14K_1A_U04, 14K_1A_U07),
 U02 - has skills of formulation of logical opinions on the base of information from different sources and critical analysis and selection of information, particularly from the internet sources (14K-1A_U06, 14K-1A_U07),
 U03 - has skills of creation of climatology analyzes based on the research and present it in the form of a report or a research article (14K_1A_U05, 14K_1A_U07),
 K01 - understands the needs for lifelong learning (14K_1A_K01, 14K_1A_K02),
 K02 - systematically updates knowledge on natural sciences and knows their practical applications (14K-1A_K02).

4. Course description:

- 1) history of studies on climate research, sources of climate information,
- 2) observation and measurement network in Poland and in the world, climatological and meteorological data, data types,
- 3) climatological data formats, tools for reading and editing of data,
- 4) climatological data collection methods,
- 5) climatological data visualization,
- 6) climatological databases in Poland and in the world.



5. Course evaluation

The finale test (practices) - 50% total score,
 projects evaluation (practices) - 40% total score,
 evaluation of activity (practices) - 10% total score.

6. Teaching methods

Teaching methods: multimedial presentations, discussion, work with the source material (climatological databases), methods of practical exercises,

7. Recommended reading list

- [1]. Boeker E., van Grondelle R., 1999, Environmental Physics, Wiley,
- [2]. Kożuchowski K., 1990, Materiały do poznania historii klimatu w okresie obserwacji instrumentalnych, UŁ,
- [3]. Cowie J., 2009, Zmiany klimatyczne Przyczyny, przebieg i skutki dla człowieka, UW,
- [4]. Fortuniak K., 2000, Stochastyczne i deterministyczne aspekty zmienności wybranych elementów klimatu Polski, Acta Univ. Lodz., Folia Geogr. Phys., 4, UŁ
- [5]. Cryer J. D., Chan K-S, 2008, Time series analysis with application in R, Springer,
- [6]. the contents of climatological web portals (e.g. IMGW, IPCC, WMO)