Basic information about the subject ( independent of the cycle)

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| **Module name** | **Meteorology and hydrology in practice part II** |
| Erasmus code |  |
| ISCED code |  |
| Language of instruction | English |
| Website |  |
| Prerequisites | Basic hydrological and meteorological knowledge |
| ECTS points hour equivalents | **Contact hours (work with an academic teacher)**  **Total number of hours with an academic teacher 140**  **Number of ECTS points with an academic teacher** 4   **Non-contact hours (students' own work)**  **Total number of non-contact hours 90**  **Number of ECTS points for non-contact hours 3**  **Total number of ECTS points for the module 7** |
| Educational outcomes verification methods | Exam - writing test, preparing of studies and presentation of results, participation in discussion |
| Description | The module includes issues of synoptic meteorology and applied climatology, documentation of groundwater resources, hydrochemistry in environmental studies and natural basis of land reclamation. |
| Reading list | Ahrens D., 2011. Essentials of Meteorology: An Invitation to the Atmosphere 6th Edition, Brooks Cole  Grzyb H., Kocan T., Rytel Z., 1985: Land reclamation. PWRiL, Warszawa.  Macioszczyk A. (red.), 2006: Basics of applied hydrogeology. Wyd. Naukowe PWN, Warszawa.  Pazdro Z., Kozerski B., 1990: General hydrogeology. Wyd. Geologiczne, Warszawa.  Perelman A., I., 1971: Geochemistry of landscape. Wyd. PWN, Warszawa.  Perry A., Thompson R., 1997. Applied Climatology: Principles and Practice 1st Edition, Routledge  Trybała M., 1996: Water management in agriculture. PWRiL, Warszawa. |
| Educational outcomes | **KNOWLEDGE**  Student knows basic definitions considering atmosphere and hydrosphere, terminology used in practice in particular.  Student knows application of meteorological and hydrological research for social and economic activity.  Student knows basic methods and techniques used for atmosphere and hydrosphere research and their practical usage  Student knows physical and chemical laws explaining phenomena and processes taking place in atmosphere.  Student identifies changes taking place in water environment under natural and human impact processes.  **SKILLS**  Student uses basic techniques and research tools typical for meteorology and hydrology.  Student uses various sources of climatological and hydrological data and information, sorts and transforms them.  Student formulates basic conclusions estimating phenomena and processes taking place in atmosphere and hydrosphere on the basis of own analyses and various data.  Student evaluates ecological and social-economic effects of human activity  **ATTITUDES**  Student understands necessity of learning through all his life.  Student perceives problems connected to his future profession. |
| Practice |  |

Information about classes in the cycle

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| Website |  |
| Educational outcomes verification methods | Exam - writing test, preparing of studies and presentation of results, participation in discussion |
| Comments |  |
| Reading list | Ahrens D., 2011. Essentials of Meteorology: An Invitation to the Atmosphere 6th Edition, Brooks Cole  Grzyb H., Kocan T., Rytel Z., 1985: Land reclamation. PWRiL, Warszawa.  Macioszczyk A. (red.), 2006: Basics of applied hydrogeology. Wyd. Naukowe PWN, Warszawa.  Pazdro Z., Kozerski B., 1990: General hydrogeology. Wyd. Geologiczne, Warszawa.  Perelman A., I., 1971: Geochemistry of landscape. Wyd. PWN, Warszawa.  Perry A., Thompson R., 1997. Applied Climatology: Principles and Practice 1st Edition, Routledge  Trybała M., 1996: Water management in agriculture. PWRiL, Warszawa. |
| Educational outcomes | **KNOWLEDGE**  Student knows basic definitions considering atmosphere and hydrosphere, terminology used in practice in particular.  Student knows application of meteorological and hydrological research for social and economic activity.  Student knows basic methods and techniques used for atmosphere and hydrosphere research and their practical usage  Student knows physical and chemical laws explaining phenomena and processes taking place in atmosphere.  Student identifies changes taking place in water environment under natural and human impact processes.  **SKILLS**  Student uses basic techniques and research tools typical for meteorology and hydrology.  Student uses various sources of climatological and hydrological data and information, sorts and transforms them.  Student formulates basic conclusions estimating phenomena and processes taking place in atmosphere and hydrosphere on the basis of own analyses and various data.  Student evaluates ecological and social-economic effects of human activity  **ATTITUDES**  Student understands necessity of learning through all his life.  Student perceives problems connected to his future profession. |
| A list of topics | The course covers the following topics:  1. Organisation of meteorological services and its importance for human activity.  2. The measures and techniques for analyzing and forecasting the weather (synoptic map).  3. The impact of weather and climate conditions in different areas of activity. Human economy (agriculture, urban planning and transport) and on the human and other living organisms (bioclimatology).  4. Possible use of meteorological and climatological knowledge in practical human activity, development of methods of meteorological data for different users.  5. The degree of recognition of groundwater resources in Poland.  6. Field studies in the context of water resource assessments, the rules for determining regional resources.  7. Methods of assessment of groundwater resources (renewable, disposable, consumables).  8. Balancing and protection of groundwater resources.  9. Water quality in the different stages of the hydrological cycle.  10. Hydrochemical and hydrogeochemical background of waters.  11. Trends and protection of water quality.  12. The rate of hydrochemical modifications of water and their origins.  13. Basic and detailed melioration, irrigation and natural conditions.  14. Consequences of melioration in Poland and other countries. |
| Teaching methods | Lecture, presentation, work on source materials, discussion, case study, “brain storm” |
| Assessment methods | writing test, preparing of studies and presentation of results, participation in discussion |