Basic information about the subject ( independent of the cycle)

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| **Module name** | **Meteorology and Hydrology in Practice part I** |
| 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 50**  **Number of ECTS points with an academic teacher** **2**   **Non-contact hours (students' own work)**  **Total number of non-contact hours 50**  **Number of ECTS points for non-contact hours 2**  **Total number of ECTS points for the module 4** |
| Educational outcomes verification methods | Writing test, preparing of studies and presentation of results, participation in discussion |
| Description | The module includes lectures on physics of the atmosphere and water management with the elements of the law. The main objective is: to present the specifics of the processes occurring in the atmosphere and to use the meteorological and climatological knowledge in a practice of human activity as well as to outline the possibility of water resources usage. |
| Reading list | 1. Ahrens D., 2011. Essentials of Meteorology: An Invitation to the Atmosphere 6th Edition, Brooks Cole 2. Ciepielowski A., 1999: Basics of water management. SGGW, Warszawa.3. The paper: Water Management  4. Framework Water Directive 2000/60/WE, EU Parliament 23rd October, 2000.  5. Mikulski Z., 1998: Water management. Wyd. Naukowe PWN, Warszawa.  6. Polish Water Law, 18th July, 2001 r.  7. Shelton 2009. Hydroclimatology: Perspectives and  Applications. Cambridge University Press |
| Educational outcomes | **KNOWLEDGE**  Student knows basic definitions considering atmosphere and hydrosphere, terminology used in practice in particular.  Student knows theoretic and empirical output in the scope of meteorology, climatology and hydrology which lets to proper interpretation of phenomena and economic processes.  Student knows application of meteorological and hydrological research for social and economic activity.  Student knows physical and chemical laws explaining phenomena and processes taking place in atmosphere.  **SKILLS**  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 arranges his own process of meteorological and hydrological knowledge acquire.  **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 | Writing test, preparing of studies and presentation of results, participation in discussion |
| Comments |  |
| Reading list | 1. Ahrens D., 2011. Essentials of Meteorology: An Invitation to the Atmosphere 6th Edition, Brooks Cole 1. 2. Ciepielowski A., 1999: Basics of water management. SGGW, Warszawa.3. The paper: Water Management  4. Framework Water Directive 2000/60/WE, EU Parliament 23rd October, 2000.  5. Haman K., 1965: Introduction to atmosphere physics. PWN, Warszawa-Łódź.  6. Iribarne J.V., Cho H. R., 1988: Atmosphere physics. PWN, Warszawa.  7. Kopcewicz T., 1956: Atmosphere physics. Part I and II. PWN, Warszawa.  8. Mikulski Z., 1998: Water management. Wyd. Naukowe PWN, Warszawa.  9. Polish Water Law, 18th July, 2001 r.  10. Shelton 2009. Hydroclimatology: Perspectives and  Applications. Cambridge University Press |
| Educational outcomes | **KNOWLEDGE**  Student knows basic definitions considering atmosphere and hydrosphere, terminology used in practice in particular.  Student knows theoretic and empirical output in the scope of meteorology, climatology and hydrology which lets to proper interpretation of phenomena and economic processes.  Student knows application of meteorological and hydrological research for social and economic activity.  Student knows physical and chemical laws explaining phenomena and processes taking place in atmosphere.  **SKILLS**  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 arranges his own process of meteorological and hydrological knowledge acquire.  **ATTITUDES**  Student understands necessity of learning through all his life.  Student perceives problems connected to his future profession. |
| A list of topics | 1. Basic concepts and elements of the atmosphere: thermal stratification and coverage, air composition and its significance  2. Radiation of the Sun and the Earth  3. Atmospheric thermodynamics, heat transfer processes, vertical balance  4. Evaporation and precipitation, condensation products (the formation of clouds and precipitation)  5. Water resources and storage.  6. Water management: historical overview, definitions, scope of activities  7. Water management in forestry, agriculture, industry and municipal economy  8. Sewage and water quality  9. Balances of water-economy  10. Protection against flooding  11. Retention and hydropower  12. Waterways and shipping  13. Water Law and Water Authority  14. The problems of water management in the future |
| Teaching methods | Lecture, presentation, work on source materials, discussion |
| Assessment methods | Writing test, preparing of studies and presentation of results, participation in discussion |