

COURSE OF DOCTORAL STUDIES

| Course title | Field of science (branch) code | University / Faculty | Institute / Department |
|--|---|--|---|
| Oceanology | Natural Sciences (Physical Geography) N 006 | Vilnius University / Faculty of Chemistry and Geosciences Klaipėda University | Institute of Geosciences / Department of Hydrology and Climatology Marine Research Institute |
| Study methods | Number of credits allocated | Study methods | Number of credits allocated |
| Lectures | | Seminars | |
| Individual work | 8 | Consultations | 2 |
| Course annotation | | | |
| <p>The course aims to introduce doctoral students with the oceanosphere (ocean, seas, estuaries, lagoons) and its properties (salinity, temperature, density and etc.), to analyze the physical processes (hydrodynamic, oceanic heat budget) and to understand the connections between geospheres (lithosphere, hydrosphere, atmosphere, cryosphere).</p> <p>Oceanology – subjects, goals and definitions. Exploration and Observations in Oceanology (in the World and Lithuania). Origin and evolution of the ocean sphere. Geological structure. Ocean-Floor Features. The Oceanic Heat Budget. Ice cover. Temperature, salinity, and density (geographical distribution and variation with depth). Ocean stratification. Water masses. Light in the Ocean and absorption of light. Gas dissolved in the ocean. Atmosphere-ocean interaction. Ocean hydrodynamic (waves, currents, tides, sea level). Wind driven ocean circulation. Vorticity in the ocean. Deep circulation in the ocean. Equatorial processes (El Nino/La Nino). Seas, estuaries and lagoon. The Baltic Sea and Curonian lagoon climatic research. Physical properties of the Baltic Sea. Curonian Lagoon: lagoon genesis, water balance, heat balance. Progressive and innovative research methods, tools, and their application in oceanography. Remote sensing. Ocean and sea monitoring. Numerical models in Oceanology. Coastal processes.</p> | | | |
| Required readings | | | |
| Webb, P. 2019. Introduction to Oceanography. Roger Williams University Library. P. 383 (https://rwu.pressbooks.pub/webboceanography/) | | | |
| Sverdrup, K., Kudela, R. 2016. Investigating Oceanography. McGraw-Hill Education, pp. 472. | | | |
| Trujillo, Alan P. 2011. Essentials of oceanography /Alan P. Trujillo, Harold V. Thurman. Boston: Prentice Hall, xxv,551 p | | | |
| Kochetkova E., Kozlov I., Dailidienė I., Smirnov K. 2013. Remote sensing for oceanographic applications. Sankt. Peterburg RSHU - Russian State Hydrometeorological University. pp.89 | | | |
| Leppäranta M., Myrberg K. 2009. Physical oceanography of the Baltic Sea. Springer, pp. 378. | | | |
| Recommended readings | | | |
| The BACC II Author Team. 2015. Second Assessment of Climate Change for the Baltic Sea Basin. pp. 501. | | | |
| Stewart R. H. 2008. Introduction to Physical Oceanography. USA. Texas. pp. 353. | | | |
| Kilpys J., Jukna L., Stonevičius E., Šimanauskienė R., Bevainis L. 2021. Žemės stebėjimas iš kosmoso, Vadovėlis, Vilnius: Vilniaus universiteto leidykla (http://www.hkk.gf.vu.lt/wordpress/wp-content/uploads/2021/02/Zemes_stebejimas_is_kosmoso_2021.pdf) | | | |
| Consulting lecturers name, surname | Degree | The most important works in the field of science (branch) have been published during the last 5 years | |
| Donatas Pupienis | dr. | <p>Jarmalavičius, D., Šmatas, V., Stankūnavičius, G., Pupienis, D., Žilinskas G. 2016. Factors controlling coastal erosion during storm events. Journal of Coastal Research SI 75, 1112–1116.</p> <p>Pupienis, D., Buynevich, I., Ryabchuk, D., Jarmalavičius, D., Žilinskas, G., Fedorovič, J., Kovaleva, O., Sergeev, A., Cichon-Pupienis A. 2017. Spatial patterns in heavy-mineral concentrations along the Curonian Spit coast, southeastern Baltic Sea. Estuarine, Coastal and Shelf Science 195, 41-50. (doi:10.1016/j.ecss.2016.08.008).</p> <p>Jarmalavičius, D., Žilinskas, G., Pupienis, D., Kriaučiūnienė, J. 2017. Subaerial beach volume change on a decadal time scale: the Lithuanian BalticSea coast. Zeitschrift</p> | |

| | | |
|---|-----|--|
| | | <p>für Geomorphologie 61(2), 149-158.</p> <p>Jarmalavičius, D., Žilinskas, G., Pupienis D. 2017. Geologic framework as a factor controlling coastal morphometry and dynamics. Curonian Spit, Lithuania. <i>International Journal of Sediment Research</i> 32(4), 597-603.</p> <p>Buynevich, I., Savarese, M., Curran, H.A., Bitinas, A., Glumac, B., Pupienis, D., Kopczinski, K., Dobrotin, N., Gnivecki, P., Boush, L.P., Damušytė, A. 2017. Sand incursion into temperate (Lithuania) and tropical (the Bahamas) maritime vegetation: Georadar visualization of target-rich aeolian lithosomes. <i>Estuarine, Coastal and Shelf Science</i>, 195 (5), 69-75.</p> <p>Sergeev, A., Zhamoida, V., Ryabchuk, D., Buynevich, I., Sivkov, V., Dorokhov, D., Bitinas, A., Pupienis, D. 2017. Genesis, distribution, and dynamics of lagoon marl extrusions along the Curonian Spit, southeast Baltic Coast. <i>Boreas</i>. 46(1), 69–82.</p> <p>Bitinas, A. Dobrotin, N., Buynevich, I. V., Molodkov, A., Damušytė, A., Pupienis, D. 2018. Coastal dune dynamics along the northern Curonian Spit, Lithuania: toward an integrated database. <i>Geological Quarterly</i>, 62(3), 553–562.</p> <p>Žilinskas, G., Jarmalavičius, D., Pupienis, D. 2018. The influence of natural and anthropogenic factors on grain size distribution along the southeastern Baltic spits. <i>Geological Quarterly</i>, 62(2), 375–384.</p> <p>Jarmalavičius, D., Pupienis, D., Žilinskas, G., Karaliūnas, V., Jukna, L. 2019. The development and stability of beach-dune system on the wave-dominated coast: A case study of the Curonian Spit, Lithuania. <i>Aeolian Research</i>, 41, (2019), 100542 doi.org/10.1016/j.aeolia.2019.100542</p> <p>Žilinskas, G., Janušaitė, R., Jarmalavičius, D., Pupienis, D., 2020. The impact of Klaipėda Port entrance channel dredging on the dynamics of coastal zone, Lithuania. <i>Oceanologia</i>, 62(4A), 489-500.</p> <p>Karaliūnas, V., Jarmalavičius, D., Pupienis, D., Janušaitė, R., Žilinskas, G., Karlonienė, D. 2020. Shore nourishment impact on coastal landscape transformation: an example of Lithuanian Baltic Sea coast. In: Malvárez, G. and Navas, F. (eds.), <i>Proceedings from the International Coastal Symposium (ICS) 2020 (Seville, Spain)</i>. <i>Journal of Coastal Research</i>, 95 (SI1), 840-844.</p> <p>Jarmalavičius, D., Pupienis, D., Žilinskas, G., Janušaitė, R., Karaliūnas, V. 2020. Beach-Foredune Sediment Budget Response to Sea Level Fluctuation. <i>Curonian Spit, Lithuania. Water</i> 2020, 12, 583.</p> |
| Inga Dailidienė | dr. | <p>Rukšėnienė, V., Dailidienė, I., Myrberg, K., Dučinskas, K., 2015. A simple approach for statistical modelling of ice phenomena in the Curonian Lagoon, the south-eastern Baltic Sea. <i>Baltica</i>, 28 (1), 11–18.</p> <p>Rukšėnienė, V., Dailidienė, I., Kelpšaitė-Rimkienė, L., Soomere, T., 2017. Sea surface temperature variations in the south-eastern Baltic Sea in 1960–2015. <i>Baltica</i>, Vol. 30 (2), 75–85.</p> <p>Dabulevičiene, T., Kozlov, I.E., Vaičiute, D., Dailidienė, I. 2018. Remote Sensing of Coastal Upwelling in the South-Eastern Baltic Sea: Statistical Properties and Implications for Coastal Environment. <i>Remote Sensing</i>. Submitted to section: <i>Ocean Remote Sensing</i>, 10, 17-52.</p> <p>Galinienė, J., Dailidienė, I., Bishop, S.R., 2019. Forest management and sustainable urban development in the Curonian Spit. <i>European Journal of Remote Sensing</i>. SI52(2), 42-57.</p> <p>Kozlov, I.E., Krek, E.V., Kostianoy, A.G., Dailidienė, I. 2020. Remote Sensing of Ice Conditions in the Southeastern Baltic Sea and in the Curonian Lagoon and Validation of SAR-Based Ice Thickness Products. <i>Remote Sensing</i>, 12(22), 3754.</p> |
| Approved by the Doctoral Committee for Physical Geography (N006) on 9 th of March 2021, protocol no. (4.20 E) 610000-KT-24 | | |
| Committee Chairman assoc. prof. dr. D. Pupienis | | |