COURSE OF DOCTORAL STUDIES

Course title	Field of science (branch) code	University / Faculty	Institute / Department
Sedimentary environments	Natural Sciences (Physical Geography) N 006	Vilnius University / Faculty of Chemistry and Geosciences Klaipėda University / Faculty of Marine Technology and Natural Sciences	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

Purpose of the course - to acquaint doctoral students with the sedimentary environments of rivers and their deltas, lakes and seas, with the greatest emphasis on dynamic factors and their reflection in sediment textures.

Methods and techniques in sedimentology. Facial analysis and paleogeography. Rates of sedimentation. Sediment transport and depositional processes. Alluvial sediments. Alluvial processes (erosion, transport, deposition). Present day alluvial sedimentary environments. River channel classification. Alluvial facies. Lakes sediments. Diversity of present day lakes. Properties of lake water. Lakes hydrodynamic, chemistry of lake water. Clastic, chemical, biochemical sedimentation. Sedimentation processes in Lithuanian lakes. Lacustrine facies. River delta concept, research schemes and models. Sedimentary environments and processes in the Nemunas River Delta. Deltaic facies. Definition and classification of estuaries. Barrier-islands/ lagoons. Sedimentation processes in the Curonian Lagoon. Sedimentation processes in shallow seas. Coastal classifications. Coastal zone processes (wave, tides, sea level, wind and gravitational process). The coastal zone of South-eastern Baltic Sea. Sedimentation processes in shelfs and deep seas.

Required readings

Sengeputa S.M. 2018. Introduction to Sedimentology. CBS PUBLISHERS AND DISTRIBUTORS PVT LTD 2nd edition. pp. 339.

Leeder M.R. 2011. Sedimentology and sedimentary basins– from turbulence to tectonics, 2nd Edition. Chichester, West Sussex, UK; Hoboken, NJ: Wiley-Blackwell. pp.784.

Reading H.G. 2009. Sedimentary environments: Processes, Facies, and Stratigraphy. John Wiley & Sons pp.704

Recommended readings

Cojan I., Renard M. 2002. Sedimentology. Taylor & Francis.

Trimonis E. 2005. Sedimentologija. Vilniaus universiteto leidykla. pp. 263.

Trimonis E. 2002. Jūrų ir vandenynų geologija. Vilniaus universiteto leidykla. pp. 372.

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.	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. 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. Jarmalavičius, D., Žilinskas, G., Pupienis, D., Kriaučiūnienė, J. 2017. Subaerial beach volume change on a decadal time scale: the Lithuanian BalticSea coast. Zeitschrift für Geomorphologie 61(2), 149-158. Jarmalavičius, D., Žilinskas, G., Pupienis D. 2017. Geologic framework as a

		factor controlling coastal morphometry and dynamics. Curonian Spit, Lithuania. International Journal of Sediment Research, 32(4), 597–603. 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. Estuarine, Coastal and Shelf Science, 195 (5), 69–75. 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. Boreas, 46(1), 69–82. 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. Geological Quarterly, 62(3), 553–562. Žilinskas, G., Jarmalavičius, D., Pupienis, D. 2018. The influence of natural and anthropogenic factors on grain size distribution along the southeastern Baltic spits. Geological Quarterly, 62(2), 375–384. 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. Aeolian Research, 41, (2019), 100542 Kaminskas, D., Rudnickaitė, E., Vaikutienė, G., Bitinas, A., Grigienė, A., Buynevich, I.V., Damušytė, A., Pupienis, D., Šinkūnas, P. 2019. Middle and Late Holocene paleoenvironmental developement of the Curonian Lagoon, Lithuania. Quaternary International, 501, Part A(15), 240-249. Žilinskas, G., Janušaitė, R., Jarmalavičius, D., Pupienis, D., 2020. The impact of Klaipėda Port entrance channel dredging on the dynamics of coastal zone, Lithuania. Oceanologia, 62(4A), 489–500. 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.), Proceedings from the International Coastal Symposium (ICS) 2020 (Seville, Spain). Journal of Coastal Research, 95 (SI1), 840–844. Jarmalavičius, D., Pupienis, D., Žilinskas, G., Janušaitė, R., Karaliūnas, V. 2020. Beach-Foredune Sediment Budget Response to Sea Level Fluctuation. Curonian Spit, Lithuania. Water 2020, 12, 583.
Albertas Bitinas	dr.	Bitinas, A., Mažeika, J., Buynevich, I. V., Damušytė, A., Molodkov, A., Grigienė, A. 2017. Constraints of Radiocarbon Dating in Southeastern Baltic Lagoons: Assessing the Vital Effects**.** In: Harff, J., Furmanczyk, K., H. van Storch (eds.) Coastline changes of the Baltic Sea from South to East – past and future projections. Springer International Publishing AG, 137–171. Druzhinina, O., Molodkov, A., Bitinas, A., Bregman, E. 2017. The Oldest Evidence for Human Habitation in the Baltic Region: A Preliminary Report on the Chronology and Archaeological Context of the Riadino-5 Archaeological Site. Geoarchaeology – An International Journal, 31(2), 156–164. Bitinas, A.; Druzhinina, O., Damusyte, A., Napreenko-Dorokhova, T., Guobyte, R., Mazeika, J. 2017. The lower reaches of the Nemunas River at the end of the Last (Weichselian) Glacial and beginning of the Holocene. Geological Quarterly, 61(1), 156–165. Druzhinina, O., Bitinas, A., Molodkov, A., Kolesnika, T. 2017. Palaeoseismic deformations in the Eastern Baltic region (Kaliningrad District of Russia). Estonian Journal of Earth Sciences, 66(3), 119–129. 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. Estuarine, Coastal and Shelf Science, 195(5), 69–75.

		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. Boreas, 46(1), 69–82. 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. Geological Quarterly, 62(3), 553–562. Kaminskas, D., Rudnickaitė, E., Vaikutienė, G., Bitinas, A., Grigienė, A., Buynevich, I.V., Damušytė, A., Pupienis, D., Šinkūnas, P. 2019. Middle and Late Holocene paleoenvironmental development of the Curonian Lagoon, Lithuania. Quaternary International, 501, Part A(15), 240–249. Pisarska-Jamroży, M., Belzyt S., Bitinas A., Jusienė A., Woronko B. 2019. Seismic shocks, periglacial conditions and glaciotectonics as causes of the deformation of a Pleistocene meandering river succession in central Lithuania. Baltica, 32(1), 63–77.
Approved by the Doctoral Committee for Physical Geography (N006) on 9th of March 2021, protocol no. (4.20 E) 610000-KT-24		
Committee Chairman assoc. prof. dr. D. Pupienis		