

### COURSE OF DOCTORAL STUDIES

Course title	Field of science (branch) code	University / Faculty	Institute / Department
Precambrian geology of the Baltic region	Natural Sciences (Geology) N 005	Vilnius University / Faculty of Chemistry and Geosciences	Institute of Geosciences /
Study methods	Number of credits allocated	Study methods	Number of credits allocated
Lectures		Seminars	
Individual work	11	Consultations	
Course annotation			
<p>The Baltic region comprises countries around the Baltic Sea, both with the Precambrian rocks exposed on the surface (Sweden, Finland) or buried beneath the sediments (Estonia, Latvia, Lithuania, northern Poland, southern Sweden, Belarus). The area includes major part of the Baltica continent (proto-Baltica of ca. 1.8 Ga). Baltica emerged after adjoining of Fennoscandia, Volgo-Uralia and Sarmatia continents and their collision/accretion zones. It makes the largest part of the present-day East European Craton.</p> <p>Major rock structures, their origin and evolution of the Precambrian Fennoscandia continent have to be studied: The study includes Archaean Karelia-Kola nuclei and surrounding volcanic arcs, volcanic island arcs, microcontinents and collision zones produced during the Svecofennian orogeny (at ca. 2-1.8 Ga). The Transscandinavian Igneous Belt (TIB) of 1.8-1.65 Ga which borders the Svecofennian orogen from west-and south-west, the rocks of the Sarmatian collision present in eastern Lithuania and Belarus (Belarus-Podlasie Granulite belts, Okolovo, Osnitski-Mikaschevichi complexes). Bergslagen-Livonia(central Sweden, Estonia, parts of Latvia and Lithuania), Mid-Baltic (part of Lithuania, Latvia, south-central Sweden) and Amberland (south-southwestern Lithuania, part of northern Poland, south Sweden) terranes, their subdivisions and evolution. Mesoproterozoic Gothian (1.75-1.5 Ga), Dano-Polonian, Tellemarkian and Hallandian orogenies (1.5-1.38 Ga) in the west, and their evidence in the east. Mesoproterozoic intrusions in central, western Lithuania, Baltic Sea, south Sweden and northern Poland, and related geothermal energy resources, ores, REEs etc.</p>			
Required readings			
Bogdanova S, Gorbachev R., Grad M, Guterch A., Janik T.,Kozlovskaja E., Motuza G., Skridlaite G., Starostenko V., Taran L & EUROBRIDGE AND POLONAISE Working Groups, 2006. EUROBRIDGE: new insight into the geodynamic evolution of the East European Craton. In: Gee D.G. and Stephenson R. A. (eds.). European Lithosphere Dynamics. Geological Society, London, Memoirs. 32, p. 599-625.			
Stephens, M.B. and Bergman Weihed J. (eds) 2020. Sweden: Lithotectonic Framework, Tectonic Evolution and Mineral Resources. Geological Society. London. Memoirs 50. 631 psl.			
Lahtinen R., Garde A. A., Melezhik V.A., 2008. Paleoproterozoic evolution of Fennoscandia and Greenland. Episodes. Vol. 31, No. 1, p. 20-28.			
Bogdanova S.V., Gorbatshev R. and Garetsky R.G, 2016. EUROPE East European Craton, Reference Module in Earth Systems and Environmental Sciences, Elsevier, 2016. 17-Oct-16 doi: 10.1016/B978-0-12-409548-9.10020-X			
Bogdanova, S., Gorbatshev, R., Skridlaite, G., Soesoo, A., Taran, L., Kurlovich, D., 2015. Trans-Baltic Palaeoproterozoic correlations towards the reconstruction of supercontinent Columbia/Nuna. Precambrian Research, 259, 5-33			
Lahtinen, R., Korja, A., Nironen, M., 2005. Palaeoproterozoic tectonic evolution. In:Lehtinen, M., Nurmi, P.A., Rämö, O.T. (Eds.), Precambrian Geology of Finland– Key to the Evolution of the Fennoscandian Shield. Elsevier, Amsterdam, pp.481–532.			
Soesoo, A., Puura, V., Kirs, J., Petersell, V., Niin, M., All, T., 2004. Outlines of thePrecambrian basement of Estonia. Proc. Est. Acad. Sci. Geol. 53, 149–164.			
Puura, V., Hints, R., Huhma, H., Klein, V., Konsa, M., Kuldkepp, R., Mänttäri, I., Soesoo,A., 2004. Svecofennian metamorphic zones in the basement of Estonia. Proc. Est.Acad. Sci. Geol. 53, 190–209.			

Bogdanova, S.V., Bingen, B., Gorbatshev, R., Kheraskova, T.N., Kozlov, V.I., Puchkov, V.N., Volozh, Y.A., 2008. The East European Craton (Baltica) before and during the assembly of Rodinia. <i>Precambrian Res.</i> 160, 23–45.		
Wiszniewska, J., Claesson, S., Stein, H., Vander Auwera, J., Duchesne, J.-C., 2002. The north-eastern Polish anorthosite massifs: petrological, geochemical and isotopic evidence for a crustal derivation. <i>Terra Nova</i> 14, 451–460.		
Skridlaite, G., Wiszniewska, J., Duchesne, J.-C., 2003. Ferro-potassic A-type granites and related rocks in NE Poland and S Lithuania: west of the East European Craton. <i>Precambrian Research</i> , Vol. 124/2-4, 305-326.		
Consulting lecturers Name, surname	Degree	The most important works in the field of science (branch) have been published during the last 5 years
Grażina Skridlaite	Dr., assoc. prof.	Skridlaite G., Bogdanova S., Taran L. and Baginski B., 2014. Recurrent high grade metamorphism recording a 300 Ma long Proterozoic crustal evolution in the western part of the East European Craton. <i>Gondwana Research</i> , V 25 (2), 649-667 Vejelyte, I., Bogdanova, S., Skridlaite, G., 2015. Early Mesoproterozoic magmatism in northwestern Lithuania: a new U-Pb zircon dating. <i>Estonian Journal of Earth Sciences</i> , 64, 3, 189-198. Bogdanova, S., Gorbatshev, R., Skridlaite, G., Soesoo, A., Taran, L., Kurlovich, D., 2015. Trans-Baltic Palaeoproterozoic correlations towards the reconstruction of supercontinent Columbia/Nuna. <i>Precambrian Research</i> , 259, 5-33 Grażina Skridlaite, Laurynas Siliauskas, Martin J. Whitehouse, Åke Johansson, Andrius Rimša, 2021. On the origin and evolution of the 1.86–1.76 Ga Mid-Baltic Belt in the western East European Craton. <i>Precambrian Research</i> , V. 367, <a href="https://doi.org/10.1016/j.precamres.2021.106403">https://doi.org/10.1016/j.precamres.2021.106403</a>
Laurynas Šiliauskas	Dr.	Prusinskiene, S., Siliauskas, L., Skridlaite, G., 2017. Varieties and chemical composition of magnetite in the Varėna Iron Ore deposits. <i>Chemija</i> , Vol. 28. No. 1, p. 39–57 Siliauskas, L., Skridlaite, G., Baginski, B., Whitehouse M. & Prusinskiene, S., 2018. What the ca. 1.83 Ga gedrite-cordierite schists in the crystalline basement of Lithuania tell us about the late Palaeoproterozoic accretion of the East European Craton, <i>GFF</i> , 140:4, 332-344,
Approved by the doctoral committee of Geology (N 005) on 1 <sup>st</sup> of December 2022 (No. (7.17 E) 15600-KT-467).		
Committee Chairman prof. dr. Sigitas Radzevičius		