

COURSE OF DOCTORAL STUDIES

Course title	Field of science (branch) code	University / Faculty	Institute / Department
GEOCHEMISTRY	Natural Sciences (Geology) N 005	Vilnius University / Faculty of Chemistry and Geosciences	Institute of Geosciences /Geology and mineralogy
Study methods	Number of credits allocated	Study methods	Number of credits allocated
Lectures		Seminars	
Individual work	7	Consultations	2
Course annotation			
<p>The main goal of the course is to study the distribution of chemical elements on the earth, the theoretical foundations of their distribution and migration.</p> <p>Examine:</p> <p>Hypotheses of the formation of chemical elements;</p> <p>The basic principles of crystallochemistry and the migration of chemical elements;</p> <p>The regularities of the distribution of chemical elements in various geospheres (atmosphere, hydrosphere, lithosphere, biosphere);</p> <p>Scattering and concentration of chemical elements during magmatic, hydrothermal, metamorphic, sedimentation processes and epigenetic changes;</p> <p>The role of chemical elements and their associations in geochemical cycles;</p> <p>Technogenic diffusion of chemical elements, its impact on the natural environment;</p> <p>Methodology for ecogeochemical mapping and monitoring.</p> <p>Main outcomes:</p> <p>To be able to apply theoretical knowledge in practice to the search for deposits of ore and non-rusty minerals, the restoration of the paleogeographic environment, in chemostratigraphy, the study of technogenic contamination of the natural environment by chemical elements. To master the peculiarities of sampling and preparation for geochemical research. To know the basic analytical methods of determining the quantities of chemical elements and other geochemical parameters.</p>			
Required readings			
Albarède F. 2003. Geochemistry. Cambridge University Press. 248 p.			
Keller E.A. 2011. Introduction to environmental geochemistry. Pearson Education. 705 p.			
Crowley Ryan P.C. 2014. Environmental and Low Temperature Geochemistry. Wiley Blackwell. 402 p.			
Hoefs J. 2009. Stable Isotope Geochemistry. Springer-Verlag Berlin Heidelberg. 285 p.			
Harmon R.S., Parker A. (eds.) 2011. Frontiers in geochemistry: contribution of geochemistry to the study of the earth. Wiley-Blackwell. 263 p.			
Mokrik R. ir Mažeika J. 2006. Hidrogeochemija. Vilniaus universiteto leidykla. 244 p			
Gill R. 2002. Modern analytical geochemistry. Longman. 329 p.			
Faure G. 1998. Principles and applications of geochemistry (2nd Editon). Prentice Hall. 600 p.			

Kadūnas V. 1998. Technogeninė geochemija. Vilnius. Geologijos institutas. 145 p.		
Rollinson H. 1993. Using geochemical data: evaluation, presentation, interpretation. Longman. 352 p.		
Consulting lecturers Name, surname	Degree	The most important works in the field of science (branch) have been published during the last 5 years
Donatas Kaminskas	Dr.	Spiridonov A, Stankevič R, Gečas T, Brazauskas A, Kaminskas D, Musteikis P, Kaveckas T, Meidla T, Bičkauskas G, Ainsaar L, Radzevičius S. 2020. Ultra-high resolution multivariate record and multiscale causal analysis of Pridoli (late Silurian): Implications for global stratigraphy, turnover events, and climate-biota interactions. <i>Gondwana Research</i> 86. 222-249.
		Kaminskas, Donatas; Rudnickaitė, Eugenija; Vaikutienė, Giedrė; Bitinas, Albertas; Grigienė, Alma; Buynevich, Ilya V.; Damušytė, Aldona; Pupienis, Donatas; Šinkūnas, Petras. “Middle and Late Holocene Paleoenvironmental Development of the Curonian Lagoon, Lithuania.” <i>Quaternary International: Peribaltic Environment</i> , vol. 501, no. A, 2019, pp. 240–249., doi:10.1016/j.quaint.2017.09.016
		Gerok, Dmitrij, Kaminskas, Donatas, Gibbard, Philip “Seismic Velocity Anomalies in the Infilling of Tunnel Valleys: Influence on the Interpretation of Seismic Data. An Example from Western Lithuania.” <i>Gff</i> , vol. 139, no. 4, 2017, pp. 276–288., doi:10.1080/11035897.2017.1397053.
		Spiridonov, Andrej; Kaminskas, Donatas; Brazauskas, Antanas; Radzevičius, Sigitas. “Time Hierarchical Analysis of the Conodont Paleocommunities and Environmental Change before and during the Onset of the Lower Silurian Mulde Bioevent - a Preliminary Report.” <i>Global and Planetary Change</i> , vol. 157, 2017, pp. 153–164., doi:10.1016/j.gloplacha.2017.09.002.

Approved by the doctoral committee of Geology (N 005) on 1 st of December 2022 (No. (7.17 E) 15600-KT-467).
Committee Chairman prof. dr. Sigitas Radzevičius