

COURSE OF DOCTORAL STUDIES

Course title	Field of science (branch) code	University / Faculty	Institute / Department
BASICS OF 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>Main topics:</p> <ol style="list-style-type: none"> 1. The object of geochemistry and the most important problems, the relationship with other sciences 2. Geochemistry of the universe 3. Common features of the geochemistry of the earth's and the earth's crust 4. Classifications of chemical elements 5. Basic principles of crystallochemistry and isomorphism 6. Migration of chemical elements and their natural associations 7. Geochemistry of the magmatic process and magmatic rocks 8. Geochemistry of the metamorphic process and metamorphic rocks 9. Geochemistry of the hydrothermal process 10. Geochemistry of the pneumatolytic-metasomatic process 11. Geochemistry of secondary processes and sedimentology 12. Geochemistry of the hydrosphere 13. Atmospheric geochemistry 14. Biogeochemistry 15. Geochemical cycle 16. The possibilities of applying geochemical methods in ecological research. 			
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. <i>Frontiers in geochemistry: contribution of geochemistry to the study of the earth</i> . Wiley-Blackwell. 263 p.		
Mokrik R. ir Mažeika J. 2006. <i>Hidrogeochemija</i> . Vilniaus universiteto leidykla. 244 p		
Gill R. 2002. <i>Modern analytical geochemistry</i> . Longman. 329 p.		
Faure G. 1998. <i>Principles and applications of geochemistry (2nd Editon)</i> . Prentice Hall. 600 p.		
Kadūnas V. 1998. <i>Technogeninė geochemija</i> . Vilnius. Geologijos institutas. 145 p.		
Rollinson H. 1993. <i>Using geochemical data: evaluation, presentation, interpretation</i> . 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 Developement 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