**COURSE OF DOCTORAL STUDIES**

| Course title | Field of science (branch) code | University / Faculty | Institute / Department |
|---|---|---|---|
| **Geographic information systems (GIS)** | 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 | **9** | Consultations | |

Course annotation

The course is intended for PhD students to get acquainted with modern information technologies and their practical applications to data management and analysis based on their spatial properties. Analysis of the collected investigation data, as part of compilation of PhD theses aimed at studies of spatial phenomena, is virtually impossible without geographic information systems.

GIS are open systems having their own programming languages. They can be improved, extended or remade and adopted for the modelling of business, management, natural resource, environmental protection, defense and other purposes. Acquiring skills in the corresponding GIS software enable vast possibilities for collection of various data, design and creation of databases, their fast deployment in the area, carrying out of necessary calculations, analysis of the spatial variation of the investigated parameters, and visualization of the acquired results in two-dimensional or three-dimensional maps, as well as producing sound conclusions and recommendations.

Required readings

Mozgeris, G., Dumbrauskas, A., Jonikavičius, D. Geografinių informacinių sistemų pagrindai: studijų knyga. Antrasis papildytas ir pataisytas leidimas. Akademija (Kauno r.): Aleksandro Stulginskio universiteto Leidybos centras, 2015

Longley, P.A., Goodchild, M.F., Maguire D.J., Rhind D.W. Geographic Information Science and Systems. 4th Edition. John Wiley & Sons, 2015

Pinde Fu. Getting to Know Web GIS. Esri Press, 2015

De Smith, M.J., Goodchild, M.F., Longley, P.A. Geospatial Analysis – A Comprehensive Guide to Principles, Techniques and Software Tools. 5th Edition. The Winchelsea Press, 2015

http://www.geoportal.lt/geoportal/web/geografines-informacijos-mokymu-medziaga/
http://www.hnit-baltic.lt/mokymai/literatura/
http://help.arcgis.com/EN/arcgisdesktop/10.0/help/index.html#//00v20000000t000000.htm
http://resources.arcgis.com/en/help/main/10.2/
http://gismokykla.maps.arcgis.com/apps/PublicGallery/index.html?appid=e06ec422d58948eeac45f82bedd073d5
http://gismokykla.maps.arcgis.com/apps/PublicGallery/index.html?appid=190a1436c8b5458d921

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| 71b5255cb3209&group=2de8bd09a4d9457b89afcde38572d79c http://doc.arcgis.com/en/arcgis-online/ |

| Consulting lecturers Name, surname | Degree | The most important works in the field of science (branch) have been published during the last 5 years |
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| **Lauras Balakauskas** | **PhD** | Daumantas, Liudas & Balakauskas, Lauras & Spiridonov, Andrej. (2020). Machine learning reveals the role of the landscape in the dynamics of human settlement rules between the Palaeolithic and Iron Ages in Lithuania. Quaternary International. 565. 10.1016/j.quaint.2020.09.004.<br>A. Spiridonov. L. Balakauskas, R. Stankevič, G. Kluczynska, L. Gedminienė, M. Stančikaitė 2019. Holocene vegetation patterns in the southern Lithuania indicate astronomical forcing on the millennial and centennial time scales. Science of the Total Environment. Scientific Reports 9, 14711. |

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