COURSE INFORMATION SHEET

University: Catholic University in Ružomberok

Faculty: Faculty of Education

Course code: KGE/52G1002Y/15	**Course title:** Quantitative Methods in Geography

Type and range of planned learning activities and teaching methods: **Form of instruction:** Seminar **Recommended study range:** **hours weekly:** 1 **hours per semester:** 13 **Teaching method:** on-site (distance method according to the document Príkaz rektora P-8/2020 since 15. 10. 2020)

Credits: 2

Recommended semester/trimester: 2.

Level of study: I.

Prerequisities:

Requirements for passing the course: Homework is assigned during the course of the semester. The final written exam comprises all topics covered in the course. Overall evaluation includes assessment of both, the homework and the exam.

Learning outcomes of the course: Students are introduced to the role of quantitative methods in acquiring and application of information and knowledge. They develop logical and analytical thinking. They acquire functional analytical and quantitative literacy for studying and teaching geography. They learn methods for retrieval of useful (from a perspective of a purpose defined in advance) information (from a perspective of an objective specified in advance) from a great amount of geographic data. They learn how to identify appropriate spatial data sources, to define the objectives of quantitative (and qualitative) analysis, and to answer the questions what input data should be use and in what way they should be processed to meet the objectives. They learn to know and understand the use of basic statistical and other quantitative data and methods in different areas of geography and the possibilities of their application in analysis and synthesis of spatial phenomena and processes. They obtain practical skills in using data and maps. They cope with basic mathematical and statistical methods for geographic data processing and visualization in textual, tabular, graphic and cartographic form, and finally their correct interpretation.

Course contents: Data. Statistical data set: Population and sample. Statistical data set records (rows) and variables (columns). Data types based on the scale of measurement: qualitative (dichotomous; polytomous) and quantitative (ordinal; metric, i. e. either interval or ratio). Tables, graphs, thematic maps. Descriptive statistics: measures of central tendency, measures of variability, distributions, categorisation, intervals. Inferential statistics: association and correlation. Idiographic and nomothetic approach in acquiring knowledge in geography. Brief introduction into the development of thinking in geography. The structure of geographic sphere (i. e. landscape) as the object of study in geography. The system of geography disciplines and its development. The position of physical-geography and human-geography disciplines in the system. The spatial aspect and the synthetic aspect as the two characteristics of the study in geography. The basics of physical-geography and human-geography synthesis. First law of geography. Spatial autocorrelation.

Friction of distance. Distance decay effect. Qualitative and quantitative methods (no only) in geography. Atlases of Slovakia. Interactive geoinformation tools on the Internet and web map services. Spatial analysis and its development (from dr. John Snow). Basics of geographic data handling in the process of creation, analysis and interpretation of thematic maps in geography. Analysing relationships between geographic variables: 1. Between two qualitative variables (contingency table, chi-square test, Pearson's contingency coefficient, Cramer's contingency coefficient); 2. Between two quantitative variables (scatter plot, Pearson's product-moment correlation coefficient and coefficient of determination, Spearman's and Kendall's correlation coefficient); 3. Between a dichotomous variable and a quantitative variable (F-test a t-test)

Recommended or required literature:
1. Bleha, Branislav (2007): MS Office pre geografa. Esprit, Bratislava, 46 p. [ISBN 9788096983209]
2. Nováková, Gabriela (2009): Matematické minimum: Predkurz k Štatistickým metódam v geografii. Geo-grafika, Bratislava, 60 p. [ISBN 978-80-89317-10-3]
3. Nováková, Gabriela (2011): Štatistika pre geografov 1. Geo-grafika, Bratislava, 214 p. [ISBN 978-80-89317-18-9]
4. Nováková, Gabriela (2012): Štatistika pre geografov 2, Geo-grafika, Bratislava, 147 p. [ISBN 978-80-89317-19-6]
5. Ivanová, Monika - Hofierka, Jaroslav (2009): Základy štatistických metód v geografii. Fakulta humanitných a prírodných vied Prešovskej univerzity, Prešov, 144 p. [ISBN 978-80-555-0091-1]
6. Punch, Keith F. [translation Jan Hendl] (2008): Úspěšný návrh výzkumu. Portál, Praha, 230 p. [ISBN 9788073674687]
7. Punch, Keith F. [translation Jan Hendl] (2008): Základy kvantitativního šetření. Portál, Praha, 150 p. [ISBN 9788073673819]
8. Magnello, Eileen - Van Loon, Borin [přeložil a přílohu 2 sestavil Jiří Foltýn; přílohu 1 sestavil Jan Hendl] (2010): Statistika. (Edícia Seznamte se). Portál, Praha, 190 p. [ISBN 9788073677534]
9. Hendl, Jan (2006): Přehled statistických metod: analýza a metaanalýza dat. Portál, Praha, 583 p. [ISBN 8073671239]
10. Hendl, Jan (2009): Přehled statistických metod: analýza a metaanalýza dat. Portál, Praha, 695 p. [ISBN9788073674823]
11. Hendl, Jan (2005): Kvalitativní výzkum: Základní metody a aplikace. Praha, Portál 407 p. [ISBN 80-7367-040-2, 9788073674854]
12. Šoltés, Erik (2008): Regresná a korelačná analýza s aplikáciami. Iura edition, Bratislava, 287 p. [ISBN 9788080781637]
13. Pravda, Ján - Kusendová, Dagmar (2004): Počítačová tvorba tematických máp. Univerzita Komenského v Bratislave, Bratislava, 264 p. [ISBN 8022320110]
14. Kusendová, Dagmar - Bačík, Vladimír (2009): Počítačová tvorba tematických máp. Cvičenia v MapInfo Professional. 2. preprac. vyd. Geo-grafika, Bratislava, 160 p. [ISBN 978-80-89317-07-3]
15. Pravda, Ján - Kusendová, Dagmar (2007): Aplikovaná kartografia. Geo-grafika, Bratislava, 224 p. [ISBN 978-80-89317-00-4]
16. Lauko, Viliam - Kasala, Karol (2009): Teória a metodológia regionálnej geografie. Kartprint, Bratislava, ISBN 978-80-88870-80-7
17. Rimarčík, Marián (2000-2008): Štatistický navigátor. Online: http://rimarcik.com/navigator/
18. Rimarčík, Marián (2006): Základy štatistiky. Fakulta zdravotníctva a sociálnej práce bl. P.P. Gojdiča, Prešov, 96 p. [ISBN 8096944924]
19. Nováková, Gabriela (2008): Základy štatistiky pre geografov. Geo-grafika, Bratislava, 218 p. [ISBN 9788089317028]

20. Bačík, Miloš (2007): Základy štatistiky pre geografov. Časť/diel I. Univerzita Mateja Bela, Banskej Bystrici, 122 p. [ISBN 9788080835026]
21. Horák, J. (2002): Prostorová analýza dat. Online: http://gis.vsb.cz/pad/index.htm
22. Džupinová, E. - Halás, M. - Horňák, M. - Hurbánek, P. - Káčerová, M. - Michniak, D. - Ondoš, S. - Rochovská, A. (2008): Periférnosť a priestorová polarizácia na území Slovenska. Geo-grafika, Bratislava, 183 p. [ISBN 978-80-89317-06-6]
23. Rosling, Hans - Rosling, Ola - Rosling Rönnlund, Anna (2019): Factfulness: Ten Reasons We're Wrong About the World – and Why Things Are Better Than You Think
24. De Smith, Michael J. – Goodchild, Michael F. – Longley, Paul A et al. (2018): Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools (6th edition) https://www.spatialanalysisonline.com/HTML/index.html , https://www.spatialanalysisonline.com/extractv6.pdf
25. De Smith, Michael J. (2018): Statistical Analysis Handbook: A Comprehensive Handbook of Statistical Concepts, Techniques and Software Tools (2018 Edition) https://www.statsref.com/HTML/index.html , https://www.statsref.com/StatsRefSample.pdf

Language of instruction:

Notes:

Course evaluation:
Assessed students in total: 44

A	B	C	D	E	FX
27.27	13.64	11.36	4.55	22.73	20.45

Name of lecturer(s): Mgr. Pavol Hurbánek, PhD.

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Supervisor(s):