

COURSE TITLE	APPLIED GEOSTATISTICS FOR GEOCHEMICAL MODELING	CODE: GC 5203
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LEVEL (UG-undergraduate/M-master) AND YEAR OF STUDY (1,2,3,4)	M2	SEMESTER	II	STATUS (CO-COMPULSORY/OP-OPTIONAL)	CO
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NUMBER OF HOURS/ WEEK				TOTAL HOURS/ SEMESTER	TOTAL HOURS OF INDIVIDUAL WORK	CREDITS	EVALUATION TYPE (D-DURING THE SEMESTER, C-COLLOQUIUM, E-EXAM, M-MIXT)	LANGUAGE
L	S	P	Pr.					
2		2		48	192	8	M	English

LECTURER	POSITION, NAME AND SURNAME	DEPARTMENT
	PhD Reader Lavinu Apostoae	Geology

PREREQUISITES	Geostatistics; Soil Geochemistry and Pollution; Weathering of Rocks; Lithochemical Survey
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OBJECTIVES	The course will introduce a number of geostatistical methods for the spatial analysis of geochemical data. Students will be able to apply geostatistics for the description of spatial patterns and identification of scales of variability, spatial interpolation and stochastic modeling of environmental attributes, creation of risk maps and their use in decision-making.
COURSE CONTENTS	Introduction. Exploratory spatial data analysis. Description of spatial patterns. Modeling spatial variability. Spatial prediction. Accounting for secondary information in kriging. Risk mapping and incorporation in decision-making. Stochastic simulation.
PRACTICAL	On the basis of geochemical data (heavy metals in the soils of the municipality of Iasi and surroundings areas) the students will be able to: <ol style="list-style-type: none"> import, visualize and analyze the data in a space-time information system; conduct a complete geostatistical analysis using the software; detect spatial outliers in the data; analyze and model the spatial variability of the data; map sparsely sampled environmental attributes and characterize the reliability of those maps; choose the interpolation technique that makes best use of the information available; create risk maps, and use them in decision-making; gain a basic understanding of state-of-the-art geostatistical methods for stochastic simulation and space-time interpolation; explore and visualize local relationships between environmental variables.
TEACHING METHODS	Lecture; discussion

RECOMMENDED READING	Chauvet, P. (2008). Aide-Mémoire de Géostatistique Linéaire. Presses de l'Ecole des Mines. Goovaerts, P. (1997). Geostatistics for Natural Resources Evaluation. Oxford University Press. Webster, R., Olivier, M. (2007). Geostatistics for Environmental Scientists. 2 nd Edition. Wiley.
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ASSESSMENT METHODS	Conditions	Fulfilment of laboratory tasks
	Criteria	Correctness of results in taking over and interpreting field data
	Way of evaluation	The evaluation of students' knowledge is done both during the semester (continuous evaluation) and at the end of the module (written examination)
	Formula of the final mark	0,30 laboratory activity + 0,35 continuous evaluation + 0,35 examination evaluation