

COURSE TITLE		SOIL GEOCHEMISTRY AND POLLUTION				CODE: GC 5103									
LEVEL(UG-undergraduate/M-master) AND YEAR OF STUDY (1,2,3)		M2	SEMESTER	I	STATUS (CO-COMPULSORY/OP-OPTIONAL)		CO								
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.	56	184	8	E	Romanian/English							
2		2													
LECTURER		POSITION, NAME AND SURNAME				DEPARTMENT									
		PhD Reader Victor Şabliovschi				Geology									
PREREQUISITES		Mineralogy; Magmatic and metamorphic petrology; Sedimentary petrology; Metallogeny; Gemmology; Terrestrial and exaterrestrial volcanism; Geochemistry; Pedogeochemistry; Special problems of geochemistry; Organic geochemistry; Special problems environmental geochemistry; Geochemistry of fuel minerals													
OBJECTIVES		1. Geochemistry of C, N, P, S in soils; 2. Carbon budget in European forests; 3. Yasso and Silva models; 4. Soil geochemistry; 5. Soil, component of the natural environment; 6. Compounds and phases. Organic and inorganic compounds; 7. Geochemistry of soil solutions; 8. Sorption geochemical processes in soils (cations and anions); 9 Alkalinity, acidity; 10. Soil pollution. Nature and source of the pollutants; 11. Heavy metals pollution (Pb, Zn, Cu, Cd, Tl, Hg, Ni, Cr, As, B, Co, Mo, Mn, Ti, Fe); 12. Selenium and sulfur pollution. Fluor pollution; 13. Iodine and bromide in soils; 14. Depolluting methods on soils. Polluting of Romanian soils with heavy metals.													
COURSE CONTENTS		I. Geochemistry of C, N, P, S in European soils; II. Carbon budget in European forests; III. Carbon and Yasso's model for the decomposition of forest soils, litter, soil organic matter, decomposition of non - woody litter, lose a certain proportion of their mass per unit of time, microbial activity; IV. Soil geochemistry; V. Humic substances. IHHS. Standards for humic and fulvic acids. Elemental composition. Humines; VI. Mineral components; silicates, clay minerals, zeolites, oxydes Fe, Al, Mn, Ti; VII. Geochemistry of soil solution from Romanian forest (spruce and beech); VIII. Geochemistry of P, S, N, C and heavy metals in agricultural soils, manures; IX. Alkalinity and acidity in agricultural and forest soils. Amendments for acidic and alkaline soils; X. Soil pollution. Nature and source of the pollutants; XI. Polluting of Romanian soils with heavy metals - hot spots (Zlatna, Rosia Montana, Copsa Mica, Baia Mare, Galati, Resita); XII. Selenium and fluorine pollution of agricultural and forest soils; XIII. Geochemistry of soil solution of forest (Poland, Austria, Bulgaria, Hungary, Germany, France); XIV. Depolluting methods on soils and groundwaters: RAAS.													
PRACTICAL		I. Geochemistry of carbon in soils. The carbon cycle of forests; II. Soil geochemistry; III. Domestic and industrial wastes; IV. Organic substances pollution; V. Liming of acidic soils; VI. Amendments for alkaline soils; VII. Pollution with inorganic substances; VIII. Geochemistry of agricultural soils; IX. Geochemistry of forest soil and soil solution; X. Geochemistry of organic matter in European forest soils (spruce and beech); XI. Soil pollution with hydrocarbon and saline water; XII. Pollution with heavy metals; XII. Pesticides; XIII. Natural manure. Composts.													
TEACHING METHODS		Interactive presentation, debates. Video and overhead projector.													
RECOMMENDED READING		Liski J., Palosuo T., Peltoniemi M., Sievänen R., (2005). Carbon and decomposition model Yasso for forest soils. Ecological Modelling 189, 168 – 182. Neag G., Culic A., Verraes G., (2001). Soluri și ape subterane poluate. Tehnici de depoluare. Ed. Dacia, Cluj-Napoca. 226p. Powlson D.S., Smith P., Smith J. U., (1996). Evaluation of Soil Organic Matter Models. Springer, Berlin, 429p.													
ASSESSMENT METHODS		<table border="1"> <tr> <td>Conditions</td> <td>Fulfilling professional obligations (training and practical work)</td> </tr> <tr> <td>Criteria</td> <td>Cumulative assessment</td> </tr> <tr> <td>Way of evaluation</td> <td>Preliminary examination + final written examination</td> </tr> <tr> <td>Formula of the final mark</td> <td>P1-2 (0.40) + E ( 0.40) + P (0.10)</td> </tr> </table>						Conditions	Fulfilling professional obligations (training and practical work)	Criteria	Cumulative assessment	Way of evaluation	Preliminary examination + final written examination	Formula of the final mark	P1-2 (0.40) + E ( 0.40) + P (0.10)
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