COURSE TITLE	GEOMICROBIOLOGY	CODE: GC 5104

LEVEL (UG-undergraduate/M-master) AND YEAR OF STUDY (1,2,3,4)	M2	SEMESTER	I	STATUS (CO-COMPULSORY/OP-OPTIONAL)	OP

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.					
1		1		28	152	6	M	English

LECTURER	POSITION, NAME AND SURNAME	DEPARTMENT
	PhD Reader Traian Gavriloaiei	Geology

PREREQUISITES	Analytical chemistry 1, 2; Mineralogy

OBJECTIVES	1. To develop by the students the assimilation and the analysis abilities for interface processes. 2. To study the chemical fundamentals of mineral-microorganisms interactions. 3. To learn the qualitative and quantitative study of adsorption phenomenon onto the wall cellular surface of microorganisms.
COURSE CONTENTS	1. Introduction. Earth and microorganisms. 2. Lithosphere and microbian habitat (rocks and minerals, soil minerals, organic soil). The role of microorganisms in the inorganic transformation from lithosphere. Geomicrobian agents, catalyses of geological and geochemical processes. Geomicrobian agents in the organic matter mineralization. Microbian formation of mineral carbonates. 3. Geomicrobiology of silicates, phosphates, metallic suphides and coal weathering products. 4. Geomicrobiology of heavy metals. 5. Chemical processes of biosolubilization. Metallic sulphides oxidation. 6. Chemical processes of bioaccumulation (extracellular, surface and intracellular bioaccumulation).
PRACTICAL	1. The stage of knowledge in geomicrobiology researches. 2. Geomicrobian cycles. 3. Geomicrobiology of mineral oxidation. 4. The study of bioaccumulation chemical processes.
TEACHING METHODS	Lectures, discussions, problematization, learning through discovery, presentation of slides

RECOMMENDED READING	Banfield J., Nealson K.H. (eds.) (1997). Rewiews in Mineralogy, vol. 35, Geomicrobiology, Interactions between microbes and minerals, Min. Soc. of America, Washington, p. 35-71, p. 361-382. Ehrlich H. L. (1995). Geomicrobiology, Marcel Dekker Inc., New York. Hong Kong. Ehrlich H.L., Brierley C.L. (1990). Microbial mineral recovery, McGraw-Hill Publishing Co., New York, p. 3-27. Gavriloaiei T. (2001). Biotehnologii minerale cu aplicatii in investigatii geochimice, Ed. Corson, Iasi.

ASSESSMENT METHODS	Conditions	Professional duties (courses, practical works or seminars)
	Criteria	Cumulative evaluation
	Way of evaluation	Evaluation during the semester (VP) + examination (Ex)
	Formula of the final mark	0.75 E + 0.25 D