Sveučilište u Zagrebu
RUDARSKO-GEOLOŠKO-NAFTNI FAKULTET

1. GENERAL INFORMATION			
Study programme title	Graduate study of Geology		
Course title	Applied Mineralogy and Petrology	**Semester**	Winter
Teacher	Prof. Marta Mileusnić, PhD	**Šifra predmeta**	80459
Course type	☐ obligatory ☒ elective	**ECTS**	5
Location	Faculty of Mining, Geology and Petroleum Engineering, Pierottijeva 6, Zagreb		
Language	☐ Croatian ☒ English		

Class type	**Sati tjedno**	**Teaching staff**	**Office hours**	**Room**	**E-mail**
Class	2	Prof. Marta Mileusnić, PhD	as agreed via e-mail or Forum in Learning Management Platform Merlin	P6 313	marta.mileusnic@rgn.hr
Practice	2	Prof. Marta Mileusnić, PhD		P6 313	marta.mileusnic@rgn.hr
Field lecture	x	x	x	x	x

E-learning level	Level 2	**Percentage of on-line class (max. 20%)**	20%

2. OPIS PREDMETA	
Course aims	Students will get acquainted with theory and practice of exploration geochemistry, i.e. with usage of geochemical principles in finding geochemical anomaly caused by ore deposit. Students will learn principles of primary and secondary dispersion, trace element geochemistry, sampling media, different chemical analyses of geological materials and geochemical data interpretation. Students will develop their communication skills through oral presentation and report writing.
Requirements for applicants	Course enrolment requirements and required entry competences: Knowledge of physical geology, mineralogy, petrology, geochemistry and economic geology (geology of ore deposits)

Programme level learning outcomes with course contribution	
Expected course level learning outcomes (4-10 outcomes)	Upon completion of this course, students will be able to: 1) demonstrate a broad and coherent understanding of theoretical and practical aspects of geochemical analyses of geological materials (eg. water, soil, rock, sediment, vegetation) and express this verbally and through written means; 2) apply sampling techniques in practice; this will demonstrate the student's ability to analyse and evaluate information to complete a particular activity; 3) apply sample preparation techniques and understand their limitations; and by doing so the student will also demonstrate the ability to apply knowledge and skills, to work autonomously and use well-developed judgment; 4) understand the limitations in data interpretation due to field conditions, sample density and contamination issues; and therefore demonstrate the ability to apply skills and knowledge to show autonomy and well-developed judgment; and 5) demonstrate the ability to analyse and evaluate information in order to interpret and present geochemical data and explain the distribution of data and identification of geochemical anomalies verbally and in written reports.
Course contents by individual lessons	
Class	Practice

Course outline according to the schedule:
Lectures, exercises and online activities are organised in weekly blocks of four hours.
1. Block: Dispersion of elements in different rocks; 1. group of individual tasks
2. Block: Primary dispersion of ore
3. Block: Sampling, sample preparation, analysis; 2. Group of individual tasks
4. Block: Statistics (populations, distributions, trashold determinations, correlations)
5. Block: On line activity: searching literature; work on 1st and 2nd group of tasks
6. Block: Presentation of 1st and 2nd group of tasks
7. Block: Uranium deposits; 3. group of individual tasks
8. Block: Sulphide deposits; 4. group of individual tasks
9. Block: Gold deposits
10. Block: On line activity: searching literature; work on 3rd and 4th group of tasks
11. Block: Presentation of 3rd and 4th group of tasks; introduction to team task
12. Block: Laboratory exercise: Preparation of samples, cold and hot extractions
13. Block: Laboratory exercise: Measuring of metals in extracts using atomic absorption spectroscopy
14. Block: On line activity: searching literature; group work on team task
15. Block: Presentation of team work, 2. test

Students' obligations	Student obligation for signature: 1) Presence at the lectures (max. 3 times absence, ie. 25% f2f lectures) 2) 4 individual tasks (oral presentations and essays) 3) Active team work on team task 4) Attendance to 2 tests			
Students' work track *(indicate share in ECTS points for each activity so that overall ECTS number corresponds to class credits score):*	Class attendance	1,5	Research	
	Project	1	Report	
	Colloquium	0,5	Seminar paper	
	Practical work	1	Oral exam	
	Written exam		On-line activity	1
Type of exam, grades and evaluation of students work during class and on final exam	Classes and examination 1) Regular presence at the class 2) Individual tasks – rating of essays and oral presentation of each task 3) Team task – rating of essays, oral presentation and activity in the team 4) Laboratory work 5) 2 tests during semester			
Mandatory literature (available in the Library and via other media)	Moon, C.J. (2006): Exploration Geochemistry (pp 155-178). In: Introduction to Mineral Exploration; 2nd Edition; Charles J. Moon, Michael K.G. Whateley & Anthony M. Evans (Editors); Blackwell Publishing, 2006, 469p. Other materials in LMS Merlin			

Aditional literature (at the moment of study program proposition application)	Levinson A. A. (1980): Introduction to Exploration Geochemistry.-Applied Publishing Ltd., Wilmette, Illinois, 924s. Rose, A. H., Hawkes & H. E., Webb, J. S.(1982): Geochemistry in mineral exploration, Harper & Raw, New York, 420s. Sinclair, A.J. (1976): Probability Graphs in Mineral Exploration. Assoc. Explor. Geochemists, Rexdale, Ont., Canada, 75s. FOREGS Geochemical Mapping Field Manual. Geological Survay of Finland, Espo, 1998. Siegel, F.R. (2002): Environmental Geochemistry of Potentially Toxic Metals. Springer. 218s. A global geochemical database for environmental and resource management. Final Report of IGCP Project 259 Scientific papers related to specific project tasks.
Examination terms	Due to small number of students enrolled and as evaluation is continuous during the semester, exam schedule will be announced only in case of need. The term will be determined in consultation with the students.
Other	

Course Teacher:

Prof. Marta Mileusnić, PhD